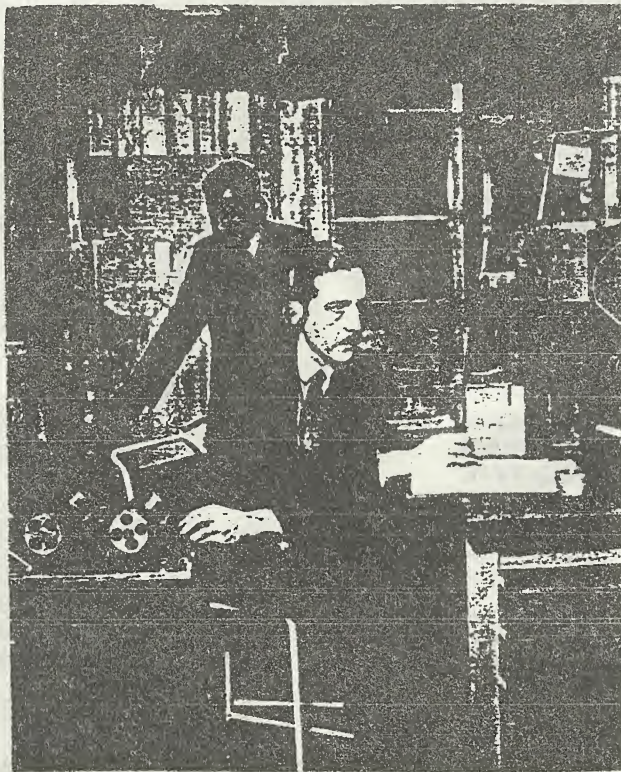


E.N.I.G.M.A.

EUROPEAN NUMBERS INFORMATION GATHERING AND MONITORING ASSOCIATION



The monitor is on to something important. Ears and hands register at top speed. Colleagues tune in to the same station. The story will be rushed through to the editors.

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ENIGMA is the journal of the European Numbers Information Gathering and Monitoring Association.

ENIGMA is a non-profit making association of listeners who monitor and gather information on 'Number Stations' and other related radio transmissions. ENIGMA aims to bring together listeners and enthusiasts and provide quality information on subjects not normally available from main-stream publications.

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Contributions

We appreciate all contributions to the newsletter (including anonymous information). We regret that we are not always able to provide a personal reply but; rest assured, we read and collate all information for present and future use. Questions are answered via our "Letter to ENIGMA" pages. ENIGMA is also a discussion forum and we welcome comments about the newsletter. If you are interested in writing a feature please contact us at the mailing address.

Acknowledgements

Information in ENIGMA may be reproduced, but please mention ENIGMA and if possible the originator of the article, we would appreciate any cuttings in which ENIGMA is mentioned.

NEXT ISSUE... We aim to publish the next issue of ENIGMA in Mid to late AUGUST 1976.

Contribution would be appreciated by SATURDAY JULY 13th.
Thank You.

Cover issue 10

This issue's cover shows a BBC Monitor hard at work ! (Taken from a war-time BBC publicity booklet).

(Messages for: D - 00000 PQ - page 26 321 - Goonhavern
AR - page 29

Station News and Latest Listening

Happy New Year from ENIGMA. A warm welcome to issue 10. We have cleared down our files on most stations in order to bring you only the logs received since issue 9. We look forward to hearing from you soon and hope you will enjoy this issue.

All times shown are UTC (GMT) Please note that some stations will change times for summer, this is noted next to each stations details.

ENGLISH LANGUAGE STATIONS (Other active stations: //-direct equivalent
/-family member)

E1) **READY READY** - Mode AM (Now operating to Summer Time). All times listed are UTC. // M17

Still very active. Transmissions repeat on two frequencies at 20 minute intervals.

SUN WK 1	21.30 4740 31	MON WK 2/4	20.00 4740 04
	21.50 4460 31		20.20 3410 04
	22.10 ? 31		20.40 3910 04
MON WK 2/3	21.30 4740 32	TUE WK 1/2	19.00 4740 06
	21.50 4460 32	3	19.20 3910 06
	22.10 4270 32		19.40 3410 06
WED WK 1/3	19.00 4740 84	WED WK 1/2	23.00 5235 13
	19.20 3910 84	4	23.20 4740 13
	19.40 3410 84		23.40 4460 13

May move to higher frequencies in summer, for complete list see M17.

E3) **LINCOLNSHIRE POACHER** - Mode USB (Stays on UTC) //E4

No major changes, still operating between 10.00 and 22.00 starting on the hour for 45 minutes. Jamming continues on many transmissions.

Active frequencies (3 in use on each transmission) are - 16475 16084 15682 14487 13375 12603 11545 10426 9251 8464 7755 7337 6959 6900 6485 5746 & 5422. Some tests have been reported with the interval signal but no messages on 20306 & 19452.

I also noticed a report of the station in the US Monitoring Times. They reported a transmission at 02.00 on 6959. LP used to operate at this time some years ago. Anyone about at this time ?

Finally a report on Austrian Radio stated that the contract to use the Abis site in Egypt by the US Government was to end in the autumn, it was reported that US backed Voice of Human Rights and Freedom for Iran was beamed from Abis. In issue 8 we did mention the possibility that LP was using this site to beam to the Middle East.

R4) CHERRY RIPR - Mode USB (Stays on UTC) //R3

LP's sister station in the Far East, still active between Monday & Friday. Could any readers in the Far East give us some idea of the signal quality?

11.00 14469 Probably on 3 frequencies at all times
12.00 13866 14469 but reception is variable in the UK.
13.00 13866 14469 17499

Also known to have used 20474 & 23411 in the past.

R5) COUNTING STATIONS - Mode AM (Stays on UTC) //G5/E14

Very active in the summer/autumn period. Transmissions seem to be in decline at present and are becoming more erratic. We have reproduced all reports since last issue although schedules are fairly short lived.

MON 07.00 9160	WED 16.00 9070	FRI 15.00 10597
MON 13.00 19975	WED 17.00 6780/8085	
MON 13.00 8014/10597	WED 18.00 8143/8143	SAT 02.00 5153
MON 18.00 6970	WED 19.00 9070	SAT 07.00 9070
MON 16.00 8125/9327	WED 20.00 5850/8143	SAT 12.00 11470
MON 19.00 9219/11491	WED 21.00 8185/10162	SAT 13.00 10597/8014
MON 20.00 5850/8143		SAT 13.00 10529/7547
MON 21.00 5371/7430		SAT 15.00 8143/9327
		SAT 20.00 5850/9160
TUE 14.00 7470/12221	THR 07.00 9070	
TUE 15.00 8085/10247	THR 15.00 8085	SUN 07.00 9070
TUE 17.00 6780/8085	THR 18.00 8080//6970	SUN 12.00 12221/7470
TUE 20.00 5885/7430	THR 19.00 5153/7430	SUN 12.00 15822/13874
TUE 23.00 4640	THR 19.00 9219/11491	SUN 13.00 8014/7547
	THR 20.00 5850/8143	SUN 14.00 7470
	THR 21.00 9185/10162	SUN 16.00 9070
	THR 21.00 5371/7430	SUN 17.00 9274
		SUN 18.00 11072/13444

On February 20th at 08.00 the following frequencies were all carrying a test tone 5315 5850 6967 8057 8116 9070. Appear to be E5 frequencies.

E6 & E7) ENGLISH MEN END '00000' & '000 000' - Mode AM (Stay on UTC) //S6 & S7 Families

No major changes, the English Man 00000's ending now seems to have a new voice which appeared around early March. Very clear presentation.

715 now seems to have replaced 947 and can be heard at present on -

MON 19.10 6864 TUE 20.10 5423 Other E6 calls: 572, 758, 836 (usual voice)
20.10 5423 E7: 273, 695

According to a British Government report just published Russian spying activity is on the increase and more agents are now operating in Britain than since the end of the cold war. The report stated that British Intelligence had had to increase it's own counter measures to take account of this.

E9) MAGNETIC FIELDS - Mode AM (Time change not known) //V8

Transmissions remain erratic and do not always start on time, if at all.

MON 19.00 variable 6645 - subject to +/- 5 kHz
SAT 09.20 variable 11290 - subject to +/- 5 kHz

See also station V8, which is related.

E10) PHONETIC ALPHABET - NATO - Mode AM/SSB (Stays on UTC)

Still very active, many new frequencies now in use. All logged frequencies are reported below. Some frequencies share more than one call:

2270 JSR 2515 VLB 2743 ULX 2846 YHF 2955 MIW 3090 SYN 3150 PCD
3270 KPA 3415 ART 3495 MIW 3640 VLB 3840 YHF 3960 VLB 4165 CIO
4270 PCD 4360 MIW 4560 YHF 4463 FTJ 4630 MIW 4665 SYN 4780 KPA
4880 ULX 5000 ??? 5092 JSR 5170 CIO 5205 VLB 5230 SYN 5437 ART
5630 KPA 5715 ZWL 5820 YHF 6370 VLB 6500 PCD 6600 DPA-N/ NDP-A *
6658 MIW 6745 MIW 6840 EZI 6911 OEM.

7115 ART 7540 JSR 7605 CIO 8025 CIO 8127 MIW 8465 SYN 8641 CIO
8745 MIW 9130 EZI 9270 KPA

10352 VLB 10568 VLB 10648 YHF 10820 SYN 10125 MIW 11565 EZI
12950 VLB 13190 MIW 13533 EZI 13920 KPA 14750 MIW 14866 VLB
15016 MIW 17410 EZI 18178 CIO 19715 EZI

* on March 14 @ 20.40 I heard the familiar voice repeating DPA-N the transmission may have been NDP-A it was difficult to hear the break. I suspect this could be one of the rarer stations like BAY OEM ZWL, GBZ & GPO.

Richard tells us that one of the E10 stations was using 15016. He tells me that the frequency is used world-wide by the USAF, in addition Richard heard an aircraft asking the USAF Global stations who the YL was, they said they didn't know. The frequency is no longer in use by E10.

E11) "OBLIQUE" - Mode AM/SSB (Stays on UTC) //S12//G11/M3.

Difficult to find this station likes to stay hidden. Also prone to sudden frequency changes.

Two ID's 231 & new 746 are at present active. I would suggest you try each week as the scheduling is rather obscure.

TUE 20.00 4015 - 746 Several messages, one of 111 groups have been
THU 20.30 3060 - 746 sent for 746. This is almost unknown of for
the "Oblique" station. The groups were read
FRI 20.30 3060 - 231 in a English with the numbers four and nine
pronounced as 'fourer & niner' !

Transmissions for 231 move between 3060 4015 4780 & 5050 depending on the time of year.

E12) N N N - Mode AM (Stays on UTC) /M2

The Wednesday evening transmission seems to have ended. The early morning frequencies and times need re-confirming. Weekly.

MON 21.00 4644 (several reports say 4643)
THU 20.00 5821
FRI 21.00 4644

THU 04.00 5821
FRI 04.00 4573

E14) 4F 'COUNT CONTROL' - Mode AM (Stays on UTC) /E5/G5

At the time of writing the 4F transmissions which start at hour +30 seem to have ended. Any reports/comments appreciated.

E15) PHONETIC ALPHABET - pre NATO - Mode AM/SSB (Stays on UTC)

Reception in England is poor, no major changes other than the use of SSB on some transmissions. Most but not all operate a daily schedule.

11.00	18000	BEC	17.30	5834	MSA
12.00	17503	WSU	18.00	5834	USP
12.30	11170	MSA	19.00	4190	SAR
13.00	11000	BEC	20.00	5530	NAS
14.00	14000	FYP	21.00	4130	MSA
16.30	6715	NAS			

E16) TWO LETTER (ENGLISH) - Mode SSB (Stays on UTC) //G16

Very little traffic is heard from this station and its larger German language sister station G16. We have had no reports of English transmissions for some time. See further comments about this station under G16.

E17) ENGLISH LADY 00000 ENDING - Mode AM (Stays on UTC)

The schedules are nothing if not incomprehensible, with random transmissions at all times of day and night. The only semi-regular call-sign heard is 274. This appears occasionally at around 08.00 between 9270 and 9290 on a Wednesday morning. The old format of sending nil messages to 274 seems to have ended and now only messages are sent.

Random logs include	MON 01.00	5835 *	Calling 372
	WED 06.00	7635	Calling ???
	WED 07.00	7834	Call unknown but had same group count as later '274' messages.
	WED 20.00	10680	Calling 893
	SAT 04.15	6810 *	Calling 657
	SUN 19.00	4445	Calling 168

The logs marked * were made in Kansas, United States of America. I have heard a cassette recording of these and the signal quality is very good indeed. This is rather disconcerting considering the location of Kansas City which is virtually in the centre of North America.

GERMAN LANGUAGE

G2//M4) SWEDISH RHAPSODY - Mode AM/SSB/MCW (Stays on UTC)

WEEK ONE BEGINS ON THE FIRST SATURDAY OF EACH MONTH. SEASONAL FREQUENCY CHANGES OCCUR: 5748 kHz (WINTER 'D'+ 'M') now replaced by Summer 6200kHz

DAY	TIME	FREQUENCY	WEEK NUMBER				
			1	2	3	4	5
SAT	09.00	8188 SSB	*3	*		*3	*3
SAT	11.00	8488					*3
SAT	12.00	8488 SSB	*3			*3	
SAT	20.00	3825			*		
SAT	21.00	4779		J ₁ *1			
SAT	22.00	3825 SSB			*		
SAT	22.30	3825 SSB			*		
SAT	23.00	5340		J ₂ *1			
SUN	00.00	4779		*			
SUN	01.00	5748 SSB		*			
SUN	10.00	8188 SSB	W ₁ *3	X ₁ *3	Y ₁ *3	Z ₁ *3	
SUN	11.00	8188				P ₁ *3	
SUN	12.00	8488 SSB	W ₂ *3	X ₂ *3	Y ₂ *3	Z ₂ *3	*3
SUN	20.00	3825 SSB	W ₃ *3	X ₃ *3	Y ₃ *3	Z ₃ *3	
SUN	21.00	5340		*1			
SUN	22.00	4832 SSB	C ₁ *1C				
SUN	22.00	3825			*1C		
MON	13.00	6200	D ₁ *1C		M ₁ *1C		
MON	17.00	6200	D ₂ *1C		M ₂ *1C		
MON	17.30	6200	D ₃ *1C		M ₃ *1C		
MON	20.00	5340 MCW			*1		
MON	22.00	6200	D ₄ *1C		M ₄ *1C		
MON	22.30	6200 5748	D ₅ *1C		M ₅ *1C		
MON	23.00	6200	D ₆ *1C		M ₆ *1C		
MON	23.30	6200	D ₇ *1C		M ₇ *1C		
TUE	18.00	4195 MCW	*1				
TUE	18.00	4195 SSB		*		*	
TUE	20.00	4195 MCW	*1	H ₁ *1			
TUE	21.00	4572 SSB	*1				(4572kHz - newly reintroduced frequency)
TUE	21.00	3825 MCW		H ₂ *1			
TUE	21.00	5340	*1C	*1C			
TUE	21.30	5340	*1C	*1C			
TUE	23.00	3825 SSB				*3	

* Indicates transmission
 1 or 3 Indicates number of headers (messages)
 C Indicates an interrupted warm up (music box 12345 67890)

Letters indicate message groups e.g. message 'D' has 14 transmissions!
 (Message groups C, D, H, I, J, M, N, P + Q were identified in 1994. W, X, Y, Z and those not yet identified are all more recent, and follow a radical re-scheduling).

DAY	TIME	FREQUENCY	1	2	3	4	5
WED	09.00	4195 MCW		*1			
WED	13.00	6200	D ₈ *1C		M ₈ *1C		
WED	17.00	6200	D ₉ *1C		M ₉ *1C		
WED	17.30	6200	D ₁₀ *1C		M ₁₀ *1C		
WED	20.00	5340				P ₂ *3	
WED	21.00	5340				P ₃ *3	
WED	22.00	6200	D ₁₁ *1C		M ₁₁ *1C		
WED	22.00	5340 SSB				P ₄ *3	
WED	22.30	6200	D ₁₂ *1C		M ₁₂ *1C		
WED	23.00	6200	D ₁₃ *1C		M ₁₃ *1C		
WED	23.30	6200	D ₁₄ *1C		M ₁₄ *1C		
THU	18.00	4195 SSB		*3			Q ₁ *3
THU	20.00	5340		I ₁ *3			
THU	20.00	5340 MCW			N ₁ *		
THU	21.00	5340		I ₂ *3			
THU	21.00	5340 MCW			N ₂ *		
THU	22.00	5340		I ₃ *3			
THU	23.00	4779	*1				
THU	23.00	3825 SSB				*	*
THU	00.00	5340 MCW				*	

FRI No transmissions are made on Fridays.

Can any readers remember when Swedish Rhapsody first started? I can remember hearing the station in the mid - 1960's, but it is possible that it was on air before this time. Have you ever heard it make any errors in transmissions? I do remember that on one occasion during certain former Saturday broadcasts (which used to take place on three frequencies running together 4779 5340 6507) that the music box just kept on playing for 19 minutes, then someone remembered to start the message.

Simon Mason also reports an odd transmission in his book "Secret Signals" - the music marker stopped as normal and the lady read out the first heading (68803) the groups that followed were either 64646 or 46464 ! These groups were sent for 5 minutes, followed by a normal message.

All in all Swedish Rhapsody is a very professional set-up. Transmissions start on time and are of a high technical standard with only the rare mistake. The master scheduling is a task in itself with many transmissions in different modes AM & SSB, some with interrupted warm up or unbroken warm up, voice or MCW transmissions. Tones are also sent 10 minutes prior to the music box starting up. On top of all this many messages are repeated throughout the week.

Have you ever listened to the MCW transmissions? After 10 minutes of U's, these start with the call LOLO - what does this mean? Is it some kind of in joke? - are they really saying HELLO HELLO ! Why use the tune Swedish Rhapsody played on a music box?

Swedish Rhapsody has changed little over many years despite so many changes in Europe since the mid 1960's. What does this tell us? Is Swedish Rhapsody coming from a very stable country?!

Comments welcome.

G4) 3-NOTE ODDITY - Mode AM (Uses CKT- Times shown are UTC) //H29A ?

Please see our ~~major~~ feature on this station later in this issue.
Please also refer to Morse section - station VDB.

Only two voice transmissions are known to be active at present ;

APRIL SUN 20.05 (UTC) 4581
APRIL SUN 20.35 (UTC) 4481 (repeat of 20.05)
Frequencies change each new month. 20.35 always 100 kHz lower.

G5) COUNTING STATION //E5/E4

This station which is a Cold War remnant of the more active E5 is
virtually dormant.

Only one transmission has been reported since the last issue ;

MON 03.00 5301

Despite the fact that there are several 1000's of frequencies to
choose from G5 seems to want to send its only message on top of
another numbers station OLX which also uses 5301 at 03.00 daily.

G6) GERMAN LADY '00000' ENDING - Mode AM //S6 Family

Sends all messages using PAIRED groups. Uses regular time slots but
random frequencies. Messages are repeated on a different frequency
following first airing.

Regular times for transmissions are ;

MON 19.00 & 20.00 Times are approximate, recent ID's include
TUE 19.00 & 20.00 721 807 628.
THU 07.00
THU 19.00 & 20.00 The station tends to use 4 & 5 Mhz in Winter
SAT 20.00 but moves higher in Summer.
SUN 07.00
SUN 19.00

G7) GERMAN LADY '000 000 ENDE' - ENDING - Mode AM //S7 Family.

Sends all messages using SINGLE groups, uses 3F or 4F decode key.
Each transmission is repeated on 2 further frequencies. Nil messages
are repeated only once.

'278' was expected to return on March 5th at 06.30 on 7378. It did not
materialize - a schedule, lasting several years, now seems to have
been dropped.

Regular schedules are subject to sudden change, ID's also change
within schedules making it difficult to follow.

The following logs are in some cases incomplete.

MON	08.00	6765	Calling	???
WED	06.30	4550/5850	Calling	577
THU	19.00	12135/11570/	Calling	372
THU	20.00	5250 /4575/	Calling	149 (Now 428)
THU	22.00	/5415/5125	Calling	416
FRI	18.00	9127 /7627/	Calling	167
FRI	19.00	5127 /4627/4447	Calling	164
SAT	08.00	12227/11127/9327	Calling	224 - 562 -214 or 621
SAT	0840	10227		522

Was heard sending 214-2 on 23rd March (2 messages for same agent).

G11) STRICH - Mode AM (Stays on UTC) //B11//S12//M3

Regular slots, but changes frequency without warning. Two ID's are active 496 & 752. 496 also receives CW transmissions.

2nd & 4th	WED	06.00	6750 or 7580	Calling 496	VOICE
	SUN	07.00	6640	Calling 496	CW

WEEKLY	TUE	21.00	4015 or 3823 4780 5015	Calling 752
WEEKLY	WED	08.00	6430 Alternatives	Calling 752

unknown.

G16) GERMAN TWO LETTER STATIONS - Mode SSB/AM (Stays on UTC) //B16.

Please see "Simon Mason Writes" for some further 2 - Letter news.

These stations seem to be fairly quiet at present. Only MD in English has been reported.

Most of the German language traffic is sent during the day time on high frequencies.

Reports received since last issue are ; MD (English) KW GK HK & SB.
The only regular evening transmissions are from GK.

Frequencies are selected from the following list ; 2690 2707 2745
3228 3262 4543 4594 4821 4888 5015 5182 5732 5770 6765 6853 7404
7532 7661 7752 7858 8063 8173 9040 9325 9450

10170 10460 10500 10740 11617 11108 11545 12092 12210 12314 13362
13752 13775 13890 14622 14945 15610 16055 16220 16414 17430 18195
18575 19295 19755 20240 20350 20675 22885

G19) GERMAN MAN

We have received one report only of a German Man.

I understand a German Man ending in 000000's did used to operate some years ago. And was the same voices as the (live) G1. Tyrolean Music.

SAT 21.00 5233 (not heard since November 25th)

SLAVIC LANGUAGES

S2) DRUMS & TRUMPETS - Mode AM (Changes to Summer Time 1 hour earlier than UTC. Times shown UTC) /E1/?M17?

Monthly 9th of each month regardless of day 20.30 UTC (19.30 Summer)

Was operating on 4740 but has recently also used 4720 & 4760. Tune around for call-sign. Different message sent each month.

*S6) & S7) RUSSIAN MEN '00000' & '000 000' ENDING - Mode AM (Stays on UTC)

No major changes. Still very active on a wide range of frequencies. Schedules are very protracted and frequency usage and ID's prone to change.

S8) YT YT YT - Mode AM/SSB (Now operating to summer time) //M27 (BTV)

Occasional transmissions have recently been heard in SSB. More regular slots have also been found.

MON 06.30 4425	WED 06.30 4425	Times shown are UTC.
MON 14.00 4755	WED 14.00 4755	
MON 18.00 4425	WED 18.00 4425	

The 18.00 messages are repeats of the 14.00 each day. This suggests 2 further transmissions which we have not yet located - the duplicates of the 06.30 messages.

For the first time a non-random element as appeared in YT's messages. This is not always present but in recent months as usually been there. It consists of two groups always at the end of one the four messages. On the 14/18.00 messages only. The first of these groups is always 00002 and the second, when first heard, was 30607. Gradually this became 30608 and is now 30609.

S12) CHERTA - Mode AM (Stays on UTC) //G11//E11//M3

S11 The 'Preska' station does not seem to be active at present, however its 'Cherta' relation is alive and well.

1st & 3rd WED of Month 16.00 3995 Call 971
1st & 3rd WED of Month 21.00 4015 Call 971 (may move to - 5180)

1st MON of Month 21.00 3823 Call 755 (may move to - 4465)

I asked several of our readers in Russia to comment on this station. Ivan & Vassily suggested that at first glance the words are Russian but are an enhanced version. They did not feel that the YL was herself Russian and found the pronunciation strange.

The full set of words used (with English phonetic pronunciation) are:

1- Adinka	6- Shest	" / "	Cherta
2- Dvoyka	7- Syem	Attention	Vnimanye
3- Troyka	8- Vosyem	End	Konyets
4- Chetyorka	9- Dyevyet		
5- Petyorka	0- Nul		

*S6 family: EG//G6//V6//M14/24 //S25
S7 family: E7//G7//V7//M12

Frequencies active are 18909 12275 11418 9320 8142 5901

S17) CZECH LADY "CONTROL" - Mode AM (Stays on UTC)

Again no changes to this station.

Daily 13.55 to 14.02 4485//5027 - single 5F message.

S18/19) CZECH MAN - Mode AM

No reports received. May still be active but very hard to find. Strong gravelly voice.

S21) RUSSIAN LADY - Mode AM (Stays on UTC) //H45 ← See Morse News

Becoming more active. See also Morse section. Recent reports include.

MON	20.30	4500	(sending a count from 1/9)	This station likes odd starting times all reports are appreciated.
MON	20.45	3160	Calling 402	
TUE	17.45	5740	Calling 342	All messages are different.
TUE	19.45	5290	Calling 491	
THU	17.40	5740	Calling 342	
THU	19.45	5290	Calling 491	
THU	20.40	3160	Calling 402	
SAT	09.20	4832	Calling ???	

S25) RUSSIAN MAN "CONTROL" - Mode AM (Stays on UTC) /S6 Family

Daily at 08.00 on 14890 ID always 615.
08.20 on 11270*

*May not move here if the 08.00 message is none standard. i.e. S25A/B. 11270 may or may not be used thereafter.

In recent month the S25A variant sent (instead of the usual 11111s or 22222s) 44444 on two separate occasions.

We appreciate your reception reports, letters and comments, which should be sent to :-

ENIGMA NEWSLETTER, 17-21, Chapel Street, BRADFORD, West Yorkshire
BD1 5DT, ENGLAND.

FACSIMILE AT - UK 01274 - 390725
OVERSEAS +44 1274 - 390725

E MAIL AT - MIKEC @ PRAXIS.CO.UK

The next issue of ENIGMA will be published in mid to late AUGUST and we would appreciate contributions by SATURDAY JULY 13th 1996.

PLEASE DROP US A LINE - WE REALLY WOULD LIKE TO HEAR FROM YOU.

S13 & S14) RUSSIAN COUNTING MEN/WOMEN - Mode AM/SSB

S13) We have not heard this for some time (transmissions are normally of just 2 minutes duration) anyone else heard him ?

S14) These are quite active and most transmissions go on for hours with a repeating loop tape.

Recent logs have included ;

14.00 4130 'UPT-76'
19.00 4040 'Buket-18'
21.00 3875 'Gora-43' (This means 'mountain')

Sometimes a female voice is heard. Several readers in Russia have commented about these stations. Ivan tells us they are sending a loop tape "I am 'announcer 58' have nothing for you, 12345678910".

Vassily sent us the following information concerning both S13 & S14.

"I have a suggestion concerning stations S13 & S14 transmissions. I have a text book used to train radio personnel ("Exploitation and equipment of radio stations") published in 1988. This book instructs on standard calling of recipient : 'I am (call sign), I am (call sign)'.

Transmit count for tuning - 12345678910' and so on. This phrase is very similar to that used by S13. The book recommends to transmit this TAPED 'form of standard calling' during adjustment of the radio channel ; in a period of unstable propagation conditions'.

To sum up ; S13 Its transmission (2-3 minutes duration) serve for adjusting of the channel to be ready to receive information. But information is being transmitted on the same frequency but in a none voice mode.

S14 Maybe these transmissions are intended for adjusting of reception installations for so called 'circular radio communications', when signals from one utility station must be received at several fixed points".

Vassily ends by saying that because of the economic situation in Russia it is possible that one team may travel between locations setting up the equipment, this way it could be left running without further adjustment. He tells ENIGMA that he first heard S14 in May 1995 when it was transmitting between 1.5 & 2.5 hours per day.

S16//M6) OLX - Mode SSB (Stays on UTC)

Still operating 23 hours per day. Transmissions start at 5 minutes to of each hour for about 15/20 minutes. About 50/50 Morse and voice messages.

Daily : 00.00 to 04.00 5301 8142 12275
05.00 to 08.00 8142 9320 12275
09.00 to 16.00 8142 11416 18303
17.00 to 20.00 5301 8142 9320
21.00 to 23.00 5301 8142 12275

OTHER LANGUAGES

V2) SPANISH LADY 2 & 3 FINALS - Mode AM //M8 /V3

Very active at present. All frequencies shown may vary by +/- 2 kHz.

MON 03.00 6826	WED 02.00 6983	FRI 02.00 6933
MON 04.00 5746	WED 03.00 6827/6797	FRI 03.00 7887
MON 05.00 3292/4028	WED 04.00 7861	FRI 05.00 4028
MON 06.00 7890/6933	WED 06.00 8166/9238	FRI 06.00 6797
MON 07.00 5417	WED 07.00 6800/4028	FRI 07.00 7887
MON 08.00 7527	WED 08.00 6826	FRI 08.00 6797/7887
MON 10.00 4028	WED 08.00 9075 (V3)	FRI 23.00 8013/5087
TUE 02.00 9140	THU 01.00 5404/5419	SAT 01.00 5135
TUE 03.00 6867	THU 03.00 6797	SAT 10.00 6797
TUE 07.00 8010	THU 04.00 10345	
TUE 08.00 7527	THU 05.00 6797/6933	SUN 02.00 8126
TUE 08.00 9260 (V3)	THU 06.00 4028/5417	SUN 03.00 7887
	THU 07.00 6797/5417	SUN 05.00 7726
	THU 08.00 7872	SUN 06.00 6785
	THU 09.00 6797	SUN 07.00 5417
	THU 11.00 4027	SUN 08.00 7887/8186
	THU 23.00 5087	SUN 09.00 7887

V2 - 5F ID with lighter voice.

V3 - 3F 2F 2F - then 5F-deeper voice.

V6) SPANISH LADY '00000' ENDING - Mode AM (Stays on UTC) //S6 family

Likes random times and frequencies but gives a strong signal in Europe.

Was active at 13.00 WED/THU in Sept on 12210 & Oct on 14940.

Likes Friday and Saturday evenings around 21/22/23.00 ID heard at this time is 579. Random frequencies.

V7) SPANISH MAN ENDS 000 000 - Mode AM (Stays on UTC) //S7 family

Another random station, follows KGB/GRU style of operation.

Random logs include ;

TUE 07.00 5880	Calling 394	5880 repeats on 8080
TUE 07.10 8080	Calling 841	
TUE 08.00 4627	Calling 394	
THU 07.30 5226	Calling 394	5226 repeats on 4627
THU 08.00 8080	Calling 394	

V8) EASTERN MUSIC STATION (Language unknown) - Mode AM /E9

This station is related to E9, only one confirmed transmission at ;

1st SATURDAY of MONTH 18.00 on 6645 +/-5 kHz

Once appeared on 2nd Saturday of Month (must use 1974 calendar) - also possibly heard using 5715 kHz on THU 15.35 & FRI 16.00.

This station plays a musical interlude and transmissions are quite long in duration.

V9) ORIENTAL LANGUAGES - Mode AM

Main reports received concern North Korea, Ian in Scotland reports the following.

SUN 15.10 6250 Radio Pyongyang with 3F Groups
SUN 15.17 6398 but not //

Stations came into parallel at 15.32 when music was broadcast.

MON 15.05 6398 Radio Pyongyang, 6398 was sending 3F groups, modulation left much to be desired. 6250 was sending music. At 15.09 the groups ended on 6398 and music followed, but was different to that on 6250.

At 15.13 both stations sent the same music until at least 16.10.

V13) NEW STAR BROADCASTING - MODE AM

Following all the recent problems in this part of the world I guess NEW STAR RADIO TAIWAN was probably very busy.

The only reports we receive seem to concern 8300 kHz which is sometimes audible from early afternoon to late evening in Europe.

Other active frequencies are ; 9725 11430 13750 and 15388. New Star Radio operates 5 frequencies each carrying a different service including 8300.

~~~~~  
XPH) HIGH PITCH POLYTONE TRANSMISSIONS

Some pattern has been found (thanks to 'D' & Peter) although the April transmission seems to have moved from 21.00 to 20.00 UTC.

Frequency usage varies according to interference, some monitoring of usable frequencies must take place prior to transmission. Transmissions repeat at 20 minute intervals from start.

| NOV TUE/FRI | DEC TUE/FRI | JAN TUE/FRI | FEB TUE/FRI | MAR TUE/FRI  |
|-------------|-------------|-------------|-------------|--------------|
| 21.00 5431  | 21.00 5754  | 21.00 5754  | 21.00 5754  | 21.00 6959   |
| 21.20 5131  | 21.20 5254  | 21.20 5234  | 21.20 5334  | 21.20 5859 * |
|             | 21.40 4454  | 21.40 4454  | 21.40 4454  | 21.40 5259   |

\* This appeared in the broadcast band on top of Radio Bulgaria.

APRIL TUE/FRI (Now 20.00 UTC)

20.00 ???                      All reports for XPL - XPH - X6 appreciated.  
20.20 9125                      X6 is still quite active.  
20.40 7525

Although we are familiar with many of the voice stations we hear sending words and numbers over short wave, we occasionally receive reports of other odd transmissions.

Two stations seem to be heard occasionally which are a little outside our coverage but may be of interest.

Simon Mason told me about a station which can be heard in the 4 Mhz band sending 'live' phonetic words read in a male voice. The words are ; Adam, Barbara, C ?, D ?, Edward, F ?, Gustav, Henrik, Ingatii, Joseph, Karel, Ludwig, Marian, Nicodem, Olga, Pavel/Philip, Quarto, Roman, Selena/Stefan, T ?, Ursula, Volenti, W ?, X ?, Ypsilon, Zygmunt.

Transmissions can last for quite a while and long messages are sent.

Mike in Kent sent me a very interesting reply after I mentioned this station to him. " 4941 kHz, I have heard this station on 4943 kHz +/- 3 kHz but it's not been in my logs as I didn't consider it as an 'ENIGMA'. The story is that during one of the news broadcasts on television from Yugoslavia back in 1994 they showed an apparent Croatian 'Amateur Station' asking for help from the West during the siege of Sarajavo. However the equipment was tuned to 4943 kHz, outside the amateur band, so I listened around +/- 5 kHz for a few evenings and heard the station mentioned above. My assumption was that the transmission emanated from either the Serb or Croatian military and was related to troop movements or positions .

It will now be interesting to see if these transmissions continue in the light of the current peace initiative, if my assumption was correct " .

Another station which we have received reports about but is not "ENIGMA"-related seems to emanate from Poland. The station consists of 'live' numbers and words spoken in Polish. The transmissions are often heard in the early mornings and again this station seems to like the 4 & 5 Mhz area of the band.

I asked our regular contributor Ivan in Russia if he could throw any light on the subject. " The traffic is sent in both directions and takes the form of coded 'telegrams'. The format for example ; "Aikov (?) - 69 to Wagina (?) -28 receive my telegram !" then an identification such as "621 27 2800 8000 621 AB YE OD" and then the message.

The groups are sent in a 3/2 format such as 352 27 and are spoken in the Polish language, in English the example would be read as - "three hundred and fifty two - twenty seven" periodically the sender checks with the recipient and will repeat any groups not clearly received.

Ivan tells us the station is probably operated by a state organisation. In Eastern Europe such stations still exist where technology has not taken over the sending of such messages.



MORSE STATION NEWS

By M.B.

Before we begin our review of recent activity, I'd like to remind newcomers to 'numbers stations' that it is not possible to cover anything approaching the total output of these stations. For one thing, there is just too much going on, and not enough of us to report it fully. Secondly, to publish, for example, every single ID sent by a particular station may well be a useless activity, whereas to publish, say, a list of group counts logged over a period may be far more useful. It all depends on the 'modus operandi' of each individual station, as to which information is valuable and which is not. This is one reason why most logs we receive (including those that we, the editors, compile ourselves) are never published - this is not to say that they won't be of unforeseen use at some future date.

The first thing any inexperienced monitor must do, is to become familiar with those stations that he/she logs. These, at first will be the more active stations, then others will follow. We cannot positively identify any station unless we are familiar with its habits, which cover all kinds of varied characteristics. It is the combination of these which make every station unique; a relevant characteristic of one station may be completely irrelevant to another, and we really need to know the difference. ENIGMA newsletter is not the best way of presenting, what I call 'station profiles'; its very nature being an evolving infrequent publication. It's far from easy to compare the profiles of different stations, merely by referring to back issues of ENIGMA. I feel that we are now at a stage where we could publish, seperately, a full resume of of the majority of these stations in a form which would make things a lot easier for all of us. The main purpose of this newsletter is to publish news on numbers stations, i.e. all significant changes, not to waste valuable space by repeating already-known or irrelevant information. Any comments are very welcome.

Bearing all this in mind, the list which follows is confined to significant changes only. Just because a station does not appear on this, it doesn't mean it's no longer active. These non-listed stations are listed, however, in a short supplementary list at the end, for information only, and without further details - they have all been consistently active since reported in ENIGMA 9.

M1 The 'A' network following its usual and predicted habits except for two odd deviations. On 6th Feb, the 2000 transmission on 4490kHz appeared also on its old secondary channel of 3868kHz. Maybe this was an error, but this still implies that a second transmitter was at the ready to be fired up on the correct frequency - which was last used around 5th

August last year. Random monitoring of the secondary freqs since has not seen a repeat of this event, however, for reasons unknown to us they may still be in use from time to time. The second oddity was a sudden flurry of anomalous (for this station) group counts starting 15th Feb at 1800 with a 44 (its presumed decode key was 400; on 23rd March at 1500 a decode key of 300 resulted in a 40-grouper with a 44444 as its 4th group - coincidence or design, one wonders!). At 2000 its departure from 40 groups dropped recklessly down to 30, poaching on inferior 'B' network territory! This undisciplined trend continued for its next transmissions - the 1500 being 43 (not that common) and the 0700 being a 34. A period of stability followed until 3rd March 0700: 45. An acceptable 41, 41, 42 followed this until the next Thursday 2000 slot with an unprecedented 50. Since then, apart from an isolated 43 its conservative habits prevailed, counts being: 42,40,-,40,40,-,40,40,41,41,42,Mia: no message,Mia: 34,Mia: 40,-,40,40,41,40,40,-,40,40,40,40 (11th April 2000) Blanks are missed transmissions.

M2 A 'special operation' transmission could have occurred on Tue 26th December at 2200 on the non-standard freq of 3825kHz. It used M2 format throughout and its special ID was 104.

M3 The daily 278 transmission ended at the end of December. In early January the 552 reappeared at 1100 every Monday on a most unusual frequency: 7256kHz, in the middle of the 41m broadcast band and badly interfering with Deutsche Welle. This was a 3 month schedule and ended on the last Monday of March. A few messages were sent and also a few M3a type, both 333s and 111s. Many other IDs are following similar schedules and messages are generally at around the 30% level at present.

M8 As well as its usual on-the-hour activities I logged a most unexpected 2210 transmission on 5760kHz (Thur) - if there's one like this there are probably others to look out for. All freqs may deviate very slightly but here are some known transmissions:-

0100: Wed 5118, Fri 5417  
0200: Sun 4028, Mon 4017, Tue 4017, Wed 4028/4328, Thu 4017, Fri 4028, Sat 4017  
0300: Sun 4028, Mon 4017, Tue 4028/7528, Wed 5417  
0400: Mon 7682, Tue 3927/6767/7652, Wed 7520, Thu 6784/6854  
0500: Tue 5417/7890, Wed 8066, Thu 4174/5800  
0600: Mon 5810  
0800: Tue 7520, Thu 6857/7520, Fri 6785  
0900: Tue 6785, Fri 6785  
1000: Thu 6826  
1100: Mon 8066, Thu 4480, Fri 4174

There was no doubt about the 5760 transmission: it had all of M8's characteristics -this may be a regular slot.

M10 (&M7) Active IDs: 035, 253 (?now dropped), 357, 408, 505, 640, 651, 695, 803, 820 all heard on 3003, 4030//5470, 4485//5027, 4835, 5027//6835, 7850//8190, 9165//9455 etc.

A variant format of M10 was heard for the first time on 4th November, 2100 on 3003//????kHz - for 15 minutes it sent 333 333 000 repeatedly, ending in an extra 000.

M11 I am almost certain that most, if not all, of these are either unidentified 'B' networks or the 'rogue' 'C' networks of M1. However, the very infrequent auto-keyed transmissions using this format are still very suspect. Until we learn more, we may as well lump all this M1-type detritus together and call it M11. The only clues differentiating the possible two stations are the keying and unlikely wide departures from M1's conservative 20 or 30 group format. There have been four of these in recent months, any of which may operate regular schedules. They need checking very carefully, and all comply with with the 20/30 format which would imply M1. They are:-

Wed 3rd Jan 1605 ?freq '325' :432 30=  
Mon 19th Feb 1820 4042kHz '103' :846 (repeated as 845!) 32=  
Thu 7th March 1900 5750kHz '713' :171 19=  
Date unknown ? 7835kHz '673'

M13 IDs in use recently: 158-000 (one of those strange M13As), 173, 253, 254, 261, 341, 346, 379, 419, 458, 714, 803, 823, 842, 975 Highest serial number is 165 (for 803), just ahead of 164 (for 173) - these are for March. If continuing in April they will be one higher, i.e. 165 & 166. March's 173 message was of possibly record length: 37 groups. This station's group counts are usually in the low twenties. Groups don't seem to be as random as they could be (!), and could do with analysing more closely.

M17 Times and identifiers: Mon 2000-84, 2130-66, 2200-56, 2300-57; Tue 0800/0900-60, 1900/2000-58 & 66, 2230-??; Wed 0800/0900-53, 1630-??, 1700-53, 1900-70, 1930/2030-50 & ?40, 2200-68; Thu 1500-60, 2030/2130-66, 2130/2230-56, 2200-03; Fri no transmissions; Sat 0400-57, 2100-68; Sun 2030-71, 2200/2300-67. Alternative times indicate seasonal change, when known. All transmissions operate on a week-of-month basis. Freqs in use (always three used consecutively at 20 m i n u t e s p a c i n g ) : 3410, 3910, 4270, 4460, 4740, 5235, 5695, 5865, 6290, 6675, 6930, 7425, 8070, 9050, 9245, 10470. May vary by + or - 10 or 20kHz. A record 37 group count appeared on Tue 19.3 repeating Tue 26.3 - both at 2000 to 58862.

M18 Now on 3802.5 & 4073kHz, probably continuous, sending its seemingly pointless minute counts either 3 or 6 hours ahead of UTC.

M20 The chameleon station, M23 in disguise or maybe her sister; whoever she is she will not settle down. Has been

active in the usual bouts possibly every month for a week or so at a time. One of its variants, the one with the five long zeroes call gives no clue as to whether a message will follow after 5 minutes or not - we have to wait and see, e.g. Wed 8th Nov 0830 700kHz (in the amateur band) sent a 20 group message, yet half an hour later on same freq no message followed its call. Its five Vs format ended on one occasion with its usual =000 at 2030 (null message, 3825kHz). In February its 0830 slot on 5540kHz included this repeat format: =?? I I I I then 'VVVV' for one minute followed by =29 I I 29= and the 29 group repeat followed, beginning and ending with the same group, 05905. (I have noticed this on several occasions with M23 also). Its March flurry at 1930 on 4767kHz was again of the five V type ending with a short pause and one further VVVVV then off. (several null messages were sent in this way)

M21 Rumoured to be Russian Naval, but proof is in short supply. This pops up all over the place with its endless quick bursts every minute counting them off, with the occasional message squeezing in. Of its two 'forms' the ??8????? freqs are: 6524,6220,5737,4574,4402,3281,3271,3337. The ??0?????s are to be found on 5017, 4574, 3281.

M23 M20 in disguise, and has same scheduling pattern, a very odd one. In February a 2000 slot operated on 6918kHz, an old favourite, where the validity indicator 846 (all even) warned of a forthcoming message. One (44 group) message was of the Repeat-first-group-at-the-end type. For those who care it was 08001 - there always seem to be a couple of zeroes in these groups. A 2030 slot in March on 4630kHz came up night after night with ID 747 - only two odd numbers but still apparently a zero message indicator. Deathly silence followed after its 10 minute call, which always ends untidily without warning. On the first of April this slot disappeared - all very typical.

M24A The very first time a variant of the very active M14 has been logged - on 13th December 5832kHz an M24 (call missed!) ended in the expected way, in this case 50 groups: 50 50 and in place of the usual five dashes, it then sent its, or another, call, 124, repeated 12 times, then BY HAND the following: 854 854 2 2 = = 11111 11111 00203 00203 = = 854 854 2 2 00000 (one of those strange two group messages used on rare occasions by its counterpart, S6). Was this a last minute addition to the 50 group message, indicating the agent's message had only just been received, or at least something of this nature?

M26 see M98

Note: M24A has similarities with E17A which probably is not a variant of E17 and needs re-allocating.

M29 (VDE) Much more active nowadays. There may be several concurrent schedules in operation, and there are two variants, the simpler one of which may have replaced the other. At the end of last year 'time' variants were active, but no obvious schedules established - possibly due to lack of rigorous monitoring. See last issue for a typical example. These have since been heard on 9382,9263,6534,3200 & 3110kHz. The simpler variant, M29A, uses the following format: VVV VVV DE VDE VDE VDE for five minutes, then VVV VVV DE VDE VDE VDE AR, short pause, VVV VVV DE VDE VDE VDE = = and straight into 5F (pairs) ending AR. These groups are by no means random and regularly include repeats of 2,3, or 4f sequences and even whole groups. The only other station using this unusual form of encryption is G4, the 3-Note Oddity, and we suspect that VDE is its Morse counterpart (just as BTV is YT's). Further evidence towards this is its (now, at least) established schedule pattern. In March I found two schedules, both daily at 1800 on 5480kHz, and 2000 on 4528kHz. At the end of the month we expected these freqs to change, and sure enough, they did! The 1800 slot\* is at present on 4620kHz, 1700\*not yet sought. Like G4 no group count is given in this variant. It also sends much shorter messages than either G4 or the 'original' M29 - between 11 and 18 groups so far. These transmissions are almost certainly coming from a Central European ex-Warsaw Pact country. They do not send messages in the normal sense of the word, but send intelligence of another form. \*Now on Summer Time.

M32-style complex There have been so many reports of stations similar to M32, operating at all times and on numerous freqs that we cannot handle the information! It is doubtful whether they are all related, although they do share call sign structures, amongst other elements, in common. M32 itself has been identified by two independent sources as 'a Russian military exercise net' which it could well have been. Not strictly something we'd cover, but interesting all the same - see my article in this and the previous issue.

M33 PBK is back again on its usual 6960kHz, and also a new freq in parallel of 5760kHz (MCW), every(?) evening at 2000 & 2100. P7X and similar calls are to be found on other freqs from time to time but are less suspect, as they tend to have a more military-type aura. All probably from France.

M39 Active last few months of 1995, 0700,0800,0900 with 'instructions' (we can hardly call these single groups 'messages') to 034,231,287,405 & 497. Freqs: 3013,4515,5293,6690 & 7810. More on this another time.

\*M44\* A new station! First heard 14th March on 3775kHz. This operated 24 hours a day non-stop sending nothing but single

random 5-letter groups without breaks, and only using the 24 letters of the Roman alphabet. A distinctive low buzz was used as modulation - interrupted carrier. This station disappeared by the following Thursday, to be rediscovered on 4620kHz, and soon after, disappeared again and has not been found since. It originated, we believe, in the Nivernais region of France - but WHY?

\*M45\* Another new one! First heard on 28th March at 1700 on 6777kHz. Here's the complete transcript: call 150 repeated for 5 minutes, then 038 038 21 21 = = 00000 95990 16162 88288 49857 84818 77208 26774 08483 57851 76088 05021 18826 50443 35082 74301 47157 95828 73728 50645 73610 (All paired)= = 038 038 21 21 000. The familiar 00000 first group and not quite random groups - there are four 88 sequences and two 578 sequences in this small sample - reminded me of another station, S21. So listening out for this one at its usual 1740 slot I was not that surprised to find that M45 is the morse counterpart of S21. Even more interesting was that the message was identical; only the ID being different, S21's being the expected 342. This is a regular slot on Tuesdays and Thursdays, and it is quite likely that all S21's are associated with M45s but using different IDs. No other numbers stations have this peculiarity. Why send the same message in two modes? Strong signal. Slow CW.

\*M46\* At 0900 on 11th Dec on 13060kHz this popped up. Sending increasing 3f groups at a random rate, most but not all separated by = They ran all the way up from 008 (start missed) to 986, 56 groups in all and 41 of these were above 800. The ending was = N N N N AR = = = = = Short zero, CW.

\*M47\* On 29th January at 1530 on 5343kHz CW another new station was sending increasing 1,2 & 3f groups. Ian of Perth, like myself again missed the beginning- 198/95 206/95207/95 210/95 215/95 216/95 254/95 1/96 2/96 4/96 5/96 7/96 11/96 12/96 a few more then AR and off. He'd heard a similar transmission 'a few weeks' earlier. Perhaps they appear at near the end of each month. The 95s & 96s probably refer to years, and the numbers possibly to message serial numbers or day numbers. A cumulative record of messages received, maybe?

M98 The '98' station has not been heard this year - so far, but long breaks are quite normal and no cause for concern!

STATION CHECK LISTS - additions:-

M10A - triplet-000 variant  
M24A - hand-keyed two group variant  
M44 - Continuous 5 letter  
M45 - Russian Lady morse, ends 000  
M46 - 3f cumulative, ends = N N N N AR = = = = =  
M47 - 1,2 & 3f cumulative, ends AR  
M36 - DELETE - ITS P8K!

## SINGLE LETTER MARKERS - MX

There hasn't been any noticeable change in activity levels. For the record - Permanent clusters (all C & S): 20048, 16332, 13527, 10871, 8495, 7039, 5154/4556kHz - these last two seem to alternate but are sometimes simultaneous.

Permanent solitaries - 3091:L - still with its chirp spent a while on 3086; 3196:R; 3323:R; 3174:V - one night this one was having transmitter problems which sounded like arcing in the PA stage. It caused very bad GRM but was back to normal the following night.

Transients - 3166, 3806, 3838: all P, often two running together; 4045:P These Ps sometimes end in short 5fig messages with 33333 as last group. 4556:P - a cluster freq also. 4825:P, 6872:P - often around 0400-0900; 6972:P, 5880:P, 4546:V - may have been the permanent marker moved from 3174; 5274:V - irregular rate (MXV); 4325:R & 4652:C - both possibly permanents venturing from their usual haunts. On 6th March a B appeared on 7440kHz but by 0700 this had changed to V. This could have been a keying error as B markers don't seem to exist, however, V markers being peculiar in several ways, have mutated like this before. (see note in last issue).

## ACTIVE MORSE STATIONS

The morse station news above does not necessarily cover routine station activity, and omits certain very active stations altogether, where no significant changes have taken place. Many of those covered above are still carrying on their usual operations. All the following are active at their normal levels, and following their usual scheduling patterns:- M1, M2, M3, M4, OLX, M7, M8, M10, M11?, M12, M14/24, M17, M18, M20, M21, 4XZ(M22), M23, BTV(M27), HEP(M28), VDE(M29), FDC(M30) - we'll publish something on this in next issue), M32 complex, PBK(M33), M35, M39, M42, M43, M45, M46?, M47?, M34?, M36?, M26? M16(BBY) was last reported in January after becoming more and more erratic - it may or may not be still around - I must admit, I haven't looked for it \*

There have been so many M32-like and 'pseudo-commercial marker' variety stations about lately, that instead of publishing further details in this issue, an article devoted to these is planned for ENIGMA 1. Whether or not any of these are "numbers" related is uncertain - they are definitely not all "military exercise nets" - 6XMB & C37A for example.

Many thanks to all of you who have sent in logs. With morse activity rising we need more dedicated monitors. If any reader would like to help us unravel some of the deeper mysteries of any particular station please let us know, and we'll supply you with all the useable information we have on that station.

\* SBY still active but erratic - April

## THE TWO-TONE STATION (M1)

By M.B.

Part 2 - the end ~~month~~ month transmissions - M1a and M1b.

Continuing from the last issue, we will devote this feature entirely to the intriguing transmissions which occur on the A network, three times at the end of each month. It is these which make M1 by far the most varied of all numbers stations. They follow the normal 'A' network scheduling pattern, and never occurred on the other networks. They can be heard only on the last Thursday and Saturday of every month, as follows:- Thursday 1800 & 2000, Saturday 1500. They use the same seasonal IDs and frequencies that were listed in ENIGMA 9, and are hand-keyed as are all M1 transmissions. The three are always different and never repeated

However, the format used is radically different, although a normal-type message format is sometimes included towards the end of the transmission, with one odd difference - groups are not paired, nor are decode key, nor is the group count. This is the M1b variant. To simplify our understanding of these transmissions, they need to be seen as a string of elements which have different purposes and many of which are optional, and not necessarily ever-present in any particular transmission. On rare occasions a normal M1 transmission takes place, complete with paired groups, which is always a rather disappointing anti-climax!

### Analysis of elements

All elements are separated by periods of silence ranging from a few seconds to over a minute, depending on at what stage they occur. Their approximate length can usually be estimated with a little experience, but the sudden return of keying without warning is always a little disconcerting! Only two elements are common to all transmissions - the first and last - all the rest are "optional", however, elements of particular types always occur in the same order. Frequent use is made of "triplet" operational codes i.e. 111, 333, 777 & 999. The first element always begins with the present schedule number which is seasonal, and the same as used by the usual M1 for calling i.e. 197,463 or 025. The second part of this element consists nearly always of a single five figure group, the first two figures of which are related to the season of operation. (the single exception will be covered later) A typical example of a complete first element would be: 025 025 025 12728 12728 where the figures 12 are related to the 025 schedule only, and not to any other. In practice, this element would be sent like this between four and seven times - the number of repeats depends on the operator's dedication and has no obvious significance. We'll call this first element, element A.



A long, silent break then follows lasting from 45 to 70 seconds, although it is supposed to be one minute, at least this is what the more diligent operators aim for, no doubt with stop watch at the ready! The second element then follows and is identical to the first except that the schedule number is now a triplet - 111 or 333, usually 333. The 5-figure group, although still related to the schedule number is never the same. This is an actual example, a continuation of the one given earlier (June 1994, 2000): 333 11386 11386 where the 11 is related to the 12 previously. Again, this element will repeat about 5 or 6 times. We'll call this element B1.

After a further silence another element of this structure may follow, again with 333 and a further, but related 5-figure pair. We'll call that B2.

The next element (element C) is more variable than the others and seems to refer to the dates of previously received messages within that month, as the figures are always less than the date of transmission. From this point onwards no elements are repeated, so if missed the first time, one gets no further chance. This indicates that they are of less importance, and more a matter of confirmation of receipt or otherwise. To make things even more confusing this element has two forms - we'll call them CX & CY. CX always begins with a triplet - 111 333 or 777 - and is followed by a few figures: the dates. Different operators have different ways of designating these, which can lead to ambiguity. Nearly always the triplet is 333. I have only logged one 111 and one 777, and both were interesting: 111 77 55 and 777 06 333 10. The 77 & 55 cannot be dates, unless they mean 7th and 5th repeated, but in other cases dates are always listed in order singly. The 777 included a 333 in the same element, each referring to different dates. The CY element is rarer, and consist of 020 or 040 not necessarily followed by dates. Like the triplets, these are also operational codes, and not surprisingly, decode keys of 0-0 are never used, neither are triplets.

Element D only occurs when a message is to follow and is always 111 999 (except once when in January 1996[2000] the 999 was omitted. As soon as the message began I expected an error had been made, but another peculiarity was the low group count of 20, never before recorded, so it may not have been).

Soon after this the message begins - usual group count 40 - just like M1. Deviations are not common. Everything is sent once only e.g. 358 40 = 97620 51104 .....99663 = 358 40 About 60% of transmissions include a message like this - element E.

Element F sometimes follows about 10-15 seconds later and

consists of 111 followed by one or two 5-figure groups all sent once only. They are un-related to schedule number and appear random.

The final element G (follows immediately after a message, but less quickly after any of the elements B or C and never follows A) is the ending, which is 111 000 sent once. The 111 is always omitted after a straight end-of-month transmission, and was once omitted after an M1b, perhaps an error.

### Reconstruction

If all this sounds confusing, here's a reconstruction of an imaginary transmission which, unrealistically, includes all possible elements, giving examples of each:-

A: 463 463 463 48321 48321 (sent 6 times - 1 min pause)  
B1: 333 47299 47299 (as above)  
B2: 111 48472 48472 (as above)  
CX: 333 08 17 21 (30 second pause)  
D: 111 999 (10 second pause)  
E: 277 41 = (41 single 5f random groups) = 277 41  
F: (20 second pause) 111 06372 18863  
G: (15 second pause) 111 000

Theoretically, this transmission could actually take place. The shortest actual M1a only included two elements, and a 333 was exceptionally included in the first one:  
197 197 197 333 89011 89011 (all only sent twice!)  
(15 second pause) 111 000

### Relationship of Seasonal 5f Groups

As mentioned earlier, the 5f groups used in elements A & B are related to the schedule in operation - which is seasonal. The first two figures are the most significant, although the others are by no means random - sometimes the identical group will appear months or years apart - but never out of season.

025 uses: 10 11 12 13  
463 uses: 47 48 - 50 - 51 - 59  
197 uses: 36 37 38 - 53 - 61 - 64 - 80 - 86 87 88 89

A few clusters are noticeable, but why does 197 use 53, when 51 and 59 belong to 463? Why has 197 got almost three times as many as 025? Will we ever know? Does it matter? Any ideas?

*M1A/B HAS SIMILARITIES WITH 525A/B*

PQ - 494/ 5001 3027 1693 2233 2379 8032 9508 7031 1114 8285 9717 3434/2  
497/ 111 AA GR43 via other means: T - F or H, F - W or X  
503/ 9449 7852 4327 9243 8858 3007 1738 6660 0704 1498 1411 8885  
0434 3112 9865 5924 5036 5279 2444 7731 1424 6920 9593/1  
504: via other means - E/Y - F/W - C/U

Since the early days of ENIGMA we have had lots of new members, it seems like a good idea just to review some of the books available on the subject of Number Stations. With such a closed subject very little reference material is available but we can recommend the following reading.

**SECRET SIGNALS - THE EURONUMBERS MYSTERY.** By Simon Mason.  
Reviewed in ENIGMA issue 2. ISBN 0-936653-28-0

With almost 70 pages on European Number Stations Secret Signals reviews both past and present activity. A list of over 300 frequencies, plus schedules and transmission times is also included; perhaps most interesting are details of clues found in transmission mistakes and traffic excerpts.

AVAILABLE FROM ; TIARE PUBLICATIONS P.O. Box 493 Lake Geneva, WI 53147  
United States of America.

COST ; \$9.95 plus \$3.00 postage. Foreign payments must be in US funds. Cheques drawn on a bank which has a United States correspondent bank. Postal money orders, VISA or MasterCard may be more convenient.

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**INTERCEPTING NUMBER STATIONS.** By Langley Pierce.  
Reviewed in ENIGMA issue 5. ISBN 095-19783-47

Around 94 pages of detailed information. The book starts with the history of Number Stations and goes onto detail each operation by intelligence community - CIA (USA), MI6 (Great Britain), BND (Germany), ect. Each section is well laid out with details of each stations characteristics.

AVAILABLE FROM ; Interproducts, 8, Abbot Street, Perth, PH2 0EB,  
Scotland. Telephone ; UK 01738 - 441199  
O/seas +441738 - 441199

COST ; £9.95 including UK postage. Add £1 Seamail or  
£2.00 for Airmail.

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**THE UNDERGROUND FREQUENCY GUIDE.** By Donald W. Schimmel.  
Reviewed in ENIGMA issue 8. ISBN 1-878707-17-5

The third edition contains 209 pages and is split into 5 sections.  
1) Number Stations. 2) Mystery Networks. 3) Four Puzzles (including Single Letter Beacons). 4) Miscellaneous Mystery Signals. 5) The Underground Frequency List.

AVAILABLE FROM ; Hightext Publications Inc. P.O. Box 1489,  
Solano Beach, CA 92075, United States of  
America.

Or ; Gazelle Book Service Ltd, Falcon House, Queens  
Square, Lancaster, LA1 1RN. UK.

Telephone ; UK 01524 68765  
O/sea +441524 68765

COST ; £15.49 Including UK Postage. Add £1.85 for Airmail.

Readers in the north of England may have seen a television programme in the series 'Close Up North' broadcast in mid - January 1986.

#### FISHING FOR SECRETS

7.30-8.00 Leeds  
**Close Up North**  
*Fishing for Secrets*  
At the height of the Cold War some Humber-side fishermen played a role in gathering intelligence for Britain. Off Russia's Arctic coast, they took photographs and recorded radio traffic under the noses of the Soviet navy.  
*Close Up North* reports:  
Editor Jon Williams; Series producer Ian Curdell ..... 527

A former trawler skipper has told how British Intelligence recruited him and other fishermen to spy on the Russians. At the height of the Cold War according to Mason Redfern, they provided valuable information for MI6 on Soviet naval operations in the Arctic.

Mr Redfern has kept silent about his role in the world of espionage for 30 years. He says he is speaking out now in protest at the Government's refusal to compensate today's fishermen for the loss of their livelihoods in the battle over EU quotas.

He says that during the Sixties and Seventies trawler skippers photographed Soviet warships under the cover of fishing some of the most sensitive waters in the world.

He recalls being issued with a camera with a telephoto lens, a 2ft telescope and an identity chart showing the silhouettes of enemy craft.

Trawler owners in Hull and Grimsby were paid thousands of pounds in compensation when catches were reduced by spying activities.

'When we spotted Russian vessels, my eyes were peeled for radar equipment, antennae and evidence of missile systems'.

The programme also showed how 'extra' fishermen were placed on vessels - they spent time on board locked in the radio room with equipment which they had brought on board. These 'extra' fishermen carried out monitoring activities from the trawlers as they sailed close to the Russian coast. Equipment was stored in weighted bags - which in the event of boarding by the Russians would be thrown over-board.

At the time the Labour Government refuted claims that fishermen were involved. But in the programme, Lord Rodgers, who as Bill Rodgers was Defence Minister at the time, claims he was misled, probably by Naval Intelligence, into issuing a denial.

In 1974, fishermen's leaders rebelled against their involvement in spying after the freezer trawler Gaul disappeared off the North Cape of Norway with the loss of 36 crew. An official inquiry concluded that the trawler had been overwhelmed by huge seas. Bereaved relatives believe, however, that she was caught while spying and that Russia and Britain are to this day conspiring to conceal the truth.

Reports from the United States in 1990 suggested that more than 200 Soviet "survey & research" and so called "fishing trawlers" were festooned with antennas and surround the American coastline.

The suggestion of 'Number' station broadcasts from ships have persisted for many years, indeed, ENIGMA continues its own investigations into the former offshore Radio North Sea International.

RADIO NORTHSEA INTERNATIONAL - the espionage links

This is just a short reply to certain people who have written in, believing in all honesty, that RNI was purely and simply there to provide entertainment. We can assure you that this was the case only during its latter period, and even at the end, the ship complete with transmitters, was sold to the Libyan government. BVD, MI5, BND and CIA all had an interest in it from the early days. More on RNI will be published later but here are a few points to ponder: Why did two Stasi agents (Meister & Bollier) set up a pirate station in the first place, the first ever with HF transmitters? Why was it financed largely by the DDR government? Why did it have mysterious links with Biafra, Libya and the UDBA, the Yugoslav State Security Service? Why was £25,000 worth of bugging equipment found by the Dutch PTT when they raided Meister's and Bollier's suite at the Grand Hotel, Scheveningen? Why did the British government decide to jam RNI, an unprecedented action? Where do the antics of the Tyrolean Music Station (G1) fit in to the jig-saw? What were the out-of-hours coded transmissions all about, and what was in that locked room.....? For those who still doubt, there are many more questions of this nature which remain unanswered.

And, of course, by now it is common knowledge that it was Edwin Bollier who supplied Libya and the Stasi with certain electronic timers just prior to the Lockerbie 'accident'. It was one of these supplied to the DDR that found its way to the PFLP-GC, and ultimately into the explosive device on Flight 103. (Incidentally, that other bomb on the MEBO II was ironically, totally unconnected with espionage activities, and was, as you rightly say, Jacques, merely the result of commercial rivalry).

M.G.

For AR:

This isn't in the county of Lincolnshire nor has it any connection with a nocturnal operator from that county, of course. Perhaps that other Dark operator, Sefton Delmer, had his HQ in Eldon Road? Photo taken June 1995.

C. Sands

P.S. May we draw your attention to a short paragraph on page 44.



## MEMBERS' QUESTIONNAIRE - THE RESULTS

Thank you to all our readers who have taken time out to return our questionnaire, this was sent out to reader who were due to renew their subscriptions for issues 9 & 10.

Why did we produce a questionnaire ? The main reasons were to find out what you thought of the newsletter and also to ask what changes you would like to see.

The results are presented in two sections. The first part profiles our readers and what they you think of the Newsletter and the second reviews your comments.

We received over 50 replies from a total of 80 issued, a 65% response rate is very high. THANK YOU.

### OUR READERS - THE PROFILE

Q1. How did you find out about ENIGMA ?

|                         |     |                         |    |
|-------------------------|-----|-------------------------|----|
| Short Wave Magazine     | 32% | International SW League | 6% |
| Not Sure                | 13% | Science Museum          | 5% |
| British DX Club         | 12% | BBC Monitoring Service  | 4% |
| World DX Club           | 7%  | Klectron (Germany)      | 3% |
| Practical Wireless      | 7%  | Radio Nederland         | 3% |
| Funk Magazine (Germany) | 6%  | Austrian Radio ORF      | 2% |

(Thank you to all above organisations for your support).

Q2. Do you monitor Number Stations ? Regularly Occasionally Never

|  |     |     |    |
|--|-----|-----|----|
|  | 34% | 63% | 3% |
|--|-----|-----|----|

Q3. Do you specialise ? Utilities Broadcast Amateur Numbers

|  |     |     |     |     |
|--|-----|-----|-----|-----|
|  | 30% | 22% | 18% | 30% |
|--|-----|-----|-----|-----|

Many reader ticked more than one choice (which was fine) and this is reflected in the total of 60% who are regular Utilities/Numbers listeners.

Q4. If Numbers Stations, how many years have you monitored these ?

The average of all listeners was 8 years.

Q5. Have you kept logs over this period ?

Yes 65% No 35%

Q6. Do you have a particular interest in espionage-related activities as opposed to related radio communications ?

Yes 82% No 18%

Q7. Would you be prepared to monitor a particular station and/or prepare schedules etc ?

Yes 58% No 35% Not Certain 7%

Q8. Do you think ENIGMA is good value for money ?

YES 98% No 0% Fair 2%

Q9. How do you rate the following aspects of ENIGMA ?

|                     |        |       |       |      |       |        |
|---------------------|--------|-------|-------|------|-------|--------|
| Voice Station News  | VG 71% | G 29% | F 0%  | P 0% | VP 0% | = 100% |
| Morse Station News  | VG 47% | G 40% | F 7%  | P 0% | VP 6% | = 100% |
| Letters to ENIGMA   | VG 34% | G 56% | F 10% | P 0% | VP 0% | = 100% |
| Things That Go Buzz | VG 47% | G 38% | F 6%  | P 0% | VP 0% | = 100% |
| Simon Mason Writes. | VG 43% | G 56% | F 1%  | P 0% | VP 0% | = 100% |
| Bookshelf           | VG 36% | G 46% | F 18% | P 0% | VP 0% | = 100% |
| Station Feature     | VG 58% | G 34% | F 8%  | P 0% | VP 0% | = 100% |

Q10. Which words best describe the general style of the Newsletter ?

\*This was a multiple choice question and from the total sampled each word scored as follow - from a potential of 100% - i.e every reader choosing that word.

|                   |          |    |        |         |        |                  |
|-------------------|----------|----|--------|---------|--------|------------------|
| Maximum selection | -        | 52 | times. | Maximum | = 100% | of Selection     |
| Trivial           | Selected | 0  | times  | from 52 | =      | 0% of potential  |
| Serious           | Selected | 28 | times  | from 52 | =      | 53% of potential |
| Educational       | Selected | 20 | times  | from 52 | =      | 39% of potential |
| Friendly          | Selected | 26 | times  | from 52 | =      | 50% of potential |
| Authoritative     | Selected | 19 | times  | from 52 | =      | 37% of potential |
| Detailed          | Selected | 44 | times  | from 52 | =      | 85% of potential |
| Accurate          | Selected | 22 | times  | from 52 | =      | 42% of potential |
| * Pointless       | Selected | 1  | time   | from 52 | =      | 2% of potential  |
| Interesting       | Selected | 47 | times  | from 52 | =      | 90% of potential |
| Boring            | Selected | 0  | times  | from 52 | =      | 0% of potential  |
| Superficial       | Selected | 0  | times  | from 52 | =      | 0% of potential  |
| Entertaining      | Selected | 13 | times  | from 52 | =      | 25% of potential |

\* Pointless was mentioned in the context that we never decode anything.

On the next pages we take a look at your comments about the Newsletter and what else you would like to see.

## THE NEWSLETTER - PRINTING & FORMAT

The print quality of ENIGMA came in for some adverse comments along with the small size of the print, the other main comments in this area related to the adoption of a consistent format.

\* We have tried hard to improve this area of concern and hope that issue 9 was much better. The format will continue as per issues 8 9 & 10, we are trying to keep a check on the size of the print and quality of reproduction.

## - SECTIONS

The general consensus of opinion was that the sections within the newsletter were about right, the comment - leave it alone - came across from many readers. Although it depends on your own particular interests many readers asked for sections to be extended.

Morse coverage, Simon Mason Writes & Things That Go Buzz all scored well, but the Book Reviews received a mixed following. Some readers asked for a better layout of Voice News.

\* The message "leave it alone" was the strongest, We will try to open up certain sections further, but this also relies on your input. We are trying to improve the layout, but the way in which some stations are scheduled makes it difficult to follow just one format.

## - THE MATERIAL CONTENT

Your comments about the newsletter were very positive, comments included ;

"All that could be desired"

"Highly impressed"

"Efficient & responsible style"

Other readers referred to 'too much information' making it difficult to take everything in and a bit 'wordy'. Others asked for more editions with less content. And some suggested we make it more fun to read.

\* We were pleased with all your comments and happy that so many readers like the end product. At present we aim for 3 issues per year. Really, I am afraid it is all down to time ! We also try to allow you sufficient time to digest each issue and make contributions for the next one.

## - EDITORIAL COMMENT

Positive suggestions about the way we treat the subject were received, some readers were un-happy with the tenuous links between stations (e.g. how do we know that stations like Swedish Rhapsody & M4 are related). We were asked not to put pet names to station in a serious journal - 'Bulgarian Betty' was one example.



The main issue surrounded our attempts to put locations and operators against stations - you suggested that we could certainly speculate but should not commit until we had a firm transmitter or agency location.

\* We only link stations together when we are certain that they are operated by the same organisation - this is based on extensive monitoring. The use of pet names is an evolutionary process and since the introduction of our Control Lists the naming of stations has become easier. We will continue to use names such as Lincolnshire Poacher along side its (E3 prefix) since it uses the musical interlude for identification purposes.

ENIGMA is a discussion forum and we welcome 'speculation' but agree that no firm operators should be named without first having located the transmitter sites.

- WHAT ELSE WOULD YOU LIKE TO SEE ?

The following areas of interest were all mentioned ;

- Features on - Stations in the Far East.
- Stations in North & South America.
- Codes Cipher, Encryption, One-Time Pads, De-cryption.
- Direction finding equipment & exercises.
- Transmitter Sites.
- The Workings of a Numbers Station.
- WW II & the ENIGMA system, including the VI's and ex wireless operators.
- Intruder Watch & Data Transmissions.
- Research on in-active stations.
- The History of Number Stations over the last 40 years.

\* We would be very happy to look at everyone of the subjects you have mentioned. If you are interested in writing a feature of contributing towards a subject we would be very pleased to hear from you.

Other more specific requests included ;

- The Control lists issued separately.
- A list of cyrillic & morse symbols.
- A 'sorted by frequency list'.
- A classified advertisements section.
- A 'home' page on Internet - Alt ENIGMA.
- Technical information on equipment used by readers & receiver recommendations.
- Information on current books available on the subject.

We are always looking for ideas ! We also keep every piece of information we receive from you, nothing is ever disposed of, this is then used towards features which appear in future issues.

- QUESTIONS & ANSWERS

We were asked a number of questions on the documents you returned along with other suggestions not covered. We will attempt to answer some of these here.

One good suggestion was to take a small short wave receiver with you when going on holiday. Comparing signal strengths overseas helps us to get an idea of the general area of a station and its targets.

Several readers again voiced concern about the legal position of listening to Number Stations and also keeping logs and documents. We always try to protect our readers and only publish first names and general locations. We also welcome anonymous information. By there very nature Number Stations are intended to be heard, however, we seem unlikely to learn anything about message content. Legally (in the UK) listening to almost anything except licensed radio broadcasters and amateurs is illegal, this then leaves about 95 % of the radio spectrum we should not then tune to.

We were asked to clarify the situation concerning readers in North & South America. ENIGMA is only a small organisation, it was felt that we would be-unable to handle the very high potential distribution of copies to the America's. We have restricted membership to Europe, The C.I.S and Middle East. We do have several readers in India & The Far East.

Several readers do receive copies in the USA, but we have not advertised or promoted ENIGMA in this area. We advised some well known monitors in the States that they were welcome to reproduce information from ENIGMA in other publications if they wished to do so.

Another comment we received read - why do you stick to riddles/mysteries when a mystery is unwrapped? Like SLHFB's which are in fact Naval Channel Markers. No mystery at all or the BT ??? "time signal station" which is operated by the Russian Air Defence Service, no mystery.

To answer, ENIGMA deals in an area full of mysteries and riddles, the stations mentioned are not listed in any official publications nor do they have official call-signs, as such we can only speculate as to their purpose and origin. Rumours of Russian involvement are suggested by monitors in the USA. It is important to gather firm evidence about ENIGMA related subjects before saying for certain what is what and where it is coming from.

We believe that Lincolnshire Poacher is operated by MI6, but we still wish to know more - where are the transmitters? what are its targets?, what goes on behind the scenes?, we should not stop researching a station until we are happy with all the answers, just like SLHFB's & the BT ???... - the more information we can gather the better.

And last but not least we were asked how many readers we have, on direct mail around 200. The newsletter is also re-copied and distributed by second parties. ENIGMA was described by one reader as having a membership like the "US Communist Party" - more infiltrators than 'real' members! (no offence intended).

CONCLUSIONS -

I think we are safe to say that you do like the Newsletter, which is good news for the editors !

Your response rate was very high - which is rare with questionnaires - most of us don't like filling them out and only one reader seemed to dislike the idea of being asked questions about himself.

We will try hard to make the improvements you have requested. Above all were the excellent suggestions concerning the kind of things you would like us to tackle in the future.

You have given us lots of ideas for future features and we will also look at the specific requests you have made.

We feel that it is important to concentrate on our core activities and not become too mainstream, there are lots of excellent magazines and newsletter which cover every aspect of the 'radio' hobby, but ENIGMA covers things others do not.

The most important part of ENIGMA - ARE YOU THE READERS - without which we would have no newsletter. We would ask you to help us in the following ways ;

Send in your logs and station news.

Let us have your comments about any aspect of Number Station listening & the Newsletter.

Contact us if you are interested in writing a feature.

Any information on espionage (in the press or media) are of interest to ENIGMA.

Look in your local area - Number Stations transmitters could be nearer than you think.

Tell us about local transmitter sites.

Take a SW radio on holiday - tell us what you hear.

If you are not a regular contributor, make it your New Years resolution to drop us a line.

Thanks for all your support, we are now at issue 10, when we started we never imagined that ENIGMA would be so successful, there is still much to learn about this little known area of the listening hobby.

PLEASE KEEP IN TOUCH & LET'S LOOK-FORWARD THE NEXT 10 ISSUES.....

THE U.S. NUMBERS SCENE - a review of the October 1994  
'Monitoring Times' Convention By M.G.

We received a recording over a year ago of John Fulford and Larry van Horn speaking at the above Convention. It is labelled "Spy Number Stations".

On the whole, it was rather a disappointment, yet this came as no great surprise, as, by now, we have become accustomed to the general poor quality of material which emanates from that country. Despite having said this, it does not stoop to the levels of "Havana Moon" and his wild flights of fancy. It only emphasises how much more rigorous we are at investigating numbers stations, here in Europe. Even in 1994 we were well ahead of the USA in the crucial matter of station identification.

My two major criticisms were the disorganised and over-frivolous presentation, and the totally inadequate, unsystematic method of station naming. The lack of knowledge of non-US numbers stations was also painfully in evidence throughout. The presentation was littered with unsupported bland statements, reminiscent of those burgeoning US evangelical broadcasts with their unshakeable dogma, but thankfully lacking the ranting!

Beginning with "It's going to be fun!" and jokingly saying they'd swear on the bible that they were not Havana Moon, I was put off from the start. However, it was all a salutary reminder to avoid at all costs the shallow, 'hobbyist' approach so dear to the Americans. Much of van Horn's contribution was based on D/F intercepts, and not until near the very end did the source of these become apparent, when a member of the audience asked a question. (The acoustics were very poor, and audience response was virtually incomprehensible - most frustrating as speakers did not repeat these responses) The brief reply to this question, by Fulford, was "I've got a buddy at the FCC. He tracks these. ....I've got lots of good friends there", which seemed to satisfy the enquirer; it certainly doesn't satisfy me! The FCC is a US government agency, which officially does not recognise numbers stations. These 'buddies' may not be quite what they seem; their material may be selectively 'disinformed'. To obtain an accurate fix on a station, two, preferably three or four, widely spaced DF sites are necessary. Several 'buddies' would need to be co-operating worldwide to supply van Horn et al with material. Van Horn refers to the antenna (note the singular) used as a 'Wollenburger', which may be the influence of American 'fast food' at work: it is a Wullenweber, a German circularly-disposed array designed in WWII and first used at Hjörning. One of these in USA would be next to useless for DFing European stations.

The results, for what they are worth, (capriciously presented with a reckless confidence) are as follows: (in actual order)

SLHFMs: "all D/Fed to Russia" but: ABEHITVWNX not Russia  
KPA (the only one they could recall): Mossad, from ~~Israel~~ and Cyprus - interesting!

KWL90: closed. US Dept of State (true) Clark AFB = volcano

KWAB0: replaced above. At Bangkok.

BBY: "D/Fed to Indonesia" !! (A long way from France)

"Czech YL 5-Digit YL Trumpet & Drum Station... Riyadh, Saudi Arabia" !! It is not Czech but Bulgarian, and the location is wrong.

KWK95: US Dept of State, Cairo Embassy.

"Get the ambience of what we're doing? I want your mind to wander a little bit" (sic - no comment!)

"English YL 3/2 digit - RAF Cyprus. Lincoln...." (Didn't know rest of name! Nor is it a 3/2, but is 5F)

"Romanian 5-digit Skylark - Romania" (Yes!)

"English 3/2 digit - S. of Athens" (Poacher, CIA or what?)

"English 3/2 digit - Isle of Crete"

"Is there a pattern seen here? Yes, there is!" (I must be going blind, for I can't see one).

"Czech 5-digit YL - replaced by a station, OLX" (OLX is also a Czech 5-digit female - this is meaningless!)

"Up in England around RAF Barford, (comma deliberate) Saint John are KRH50 and 51. Not in London...but over at the RAF base" (The prefix 'Royal Air Force' is often used as a euphemism for designating US military establishments in Britain - it is nominal only, and includes a token RAF liaison officer to deal with concerns of the local inhabitants. ['natives' in USAF parlance!]) Far from being an RAF base, Barford St John is a major US HF transmitting site, run by USAF, and widely used by CIA. This, and the receivers at Croughton are linked by microwave [DEB] and line to the US Embassy in London).

"Around London - an English 5digit Nos Station" (??)

"English YL Numbers, German 3/2 digit - N.France" (??)

"DKX - out of Europe" (part of KUL network)

"German 3/2 - out of Europe" (??)

"English 5-digit number - German/French border" (??)

KKN44: "We had a small problem in Liberia ...a revolt, this was destroyed with it" (true)

"English YL 3/2 digit - Recife, Brazil"

"English YL 5 digit - Cayman Islands"

"Spanish 5-digit YL - Cuba and Nicaragua"

"5-digit morse, cut numbers type stuff - Cuba"

KUC KUL YDU - "Cuba, RTTY type"

KKN39 & "Spanish YL 4-digit - Jupiter Inlet" (Florida)

"Spanish YL 4-digit, English YL 3-digit, KKN50 - Warrington, Virginia, a secret CIA base comms facility" (Warrenton)

"5-digit morse - Fort Campbell, Kentucky" (the most sweeping statement of them all!)

"Whale Noises on 11267 & 6693 (first mention of freqs so far) - 'Hicom' (whatever that is) AT&T - merely feedback - from Jacksonville and Norfolk military comms facilities" Vague References to Cutler (Maine) and Diego Garcia in connection with Water Dripper - then says it's an OTHR in "Nova Scotia neck of the woods, looking for drug-runners" (??) "Simon Mason, 'Langley Pierce' and ENIGMA people very rarely hear 5-digit and 4-digit no. stas. in Europe. Gee, I wonder why!" (emphasis mine - if this were true we'd have nothing to do - almost!) Then he says, "They're heading South!" Oh, I see, he's referring to US no. stations, but it's not clear. He goes on to talk of 4,5 & 3/2 being 'mission specific', and mentions US Special Forces as using 5-digit morse, as they did from Cayman just before they invaded Haiti. The preference for the higher freqs by the KUL network "smacks of long-haul" (it does) and baud rate and shift "smacks of Russia", and concludes that it is a DGI-Russia link. Actually it is more than this.

He ends by emphasising his dedication to cold, hard facts, and avoidance of Havana Moon's approach and wild speculations, but the value of the research is marred by poor and vague station identification, and a lack of independent supporting evidence.

John Fulford covers various related points in a haphazard fashion, and tells us little we don't already know. He intriguingly mentions, in connection with US facilities on Guam, "ties between religious broadcasters and numbers stations" - not as outlandish as it seems. Referring to US numbers, he says 4-digit traffic is "routine", 3/2 traffic reflects international events "especially on Mossad channels" - they don't use 3/2 so what does he mean? With "5-digit English, really intriguing things are going on ... special forces".

He finishes by saying that when sending in logs, not to forget to include details of language, gender, no. of digits, UTC and day of week. We would say that much more is needed in order to properly indentify a station, and what about the vast majority of activity, which is morse, not voice? Format details are absolutely vital.

\* A mysterious "song and dance" station once appeared on top of a Numbers Station on 6840kHz, and a member of the audience admitted to this, and why not? He had as much right to be there as the spook! Lastly, a possibly apocryphal tale of modern folklore, a report of a PIRATE numbers station sending the names of Mexican foods in place of digits! My ambition is to get that one on the menu ...sorry, tape.

\*\*\*\*\*

## E.N.I.G.M.A. Bookshelf

Not quite an ENIGMA book review this issue, however, we did receive details of a book via the Internet which may be of interest to readers.

### THE HOBBYIST'S GUIDE TO COMINT COLLECTION & ANALYSIS

The Hobbyist's Guide to COMINT Collection & Analysis, written and published by Tom Roach, opens some very new territory. COMINT is an acronym for communications intelligence. The public's knowledge of COMINT is almost totally historical and derives from the publication of such books as: "The American Black Chamber" a book written by Americas's father of cryptology Herbert Yardley, David Kahn's blockbuster "The Codebreakers", and James Bamford's Puzzle Palace, to mention some of the best known books dealing with this arcane subject.

The Hobbyist's Guide to COMINT Collection and Analysis breaks new ground here, since it provides information on how easily the reader can collect and analyze COMINT. It turns out this can be done with radio receivers and "decoder" boxes which are easily purchased on the open market. The book reveals some very interesting Russian messages Mr. Roach has received using a shortwave receiver and "decoder" while sitting in the comfort of his den. And what a bizarre catch he reveals. The messages range in subject matter from the deliberate canning of fish tainted by toxic waste, to an "upper air weather" message broadcast from a Russian trawler sitting off Vandenberg AFB. The Russian vessel was monitoring tests of United States anti-missile launches from Vandenberg to Kwajalein.

The book even includes intercepts, and technical descriptions of four distinctly different types of KRIPTOGRAMMA messages. These are messages which use special Russian encryption methods (still in use). The messages are sent by both Russian trawlers (who catch a lot more than fish!) and Space Event Support Ships (SESS). You are even instructed in how to learn when, and where, the next Russian ICBM shot will impact in the icy waters off the Kamchatka peninsula. You learn how to find the proper radio frequency to monitor ship traffic in the middle East. As a convenience, the book comes with a spiral metal binder so it can lay flat on the desk of the home COMINT collector deciphering the latest Russian "20101" messages. Lest you believe only the Russians provide material for the hobbyist, the author reveals how he intercepted a U.S. military classified message accidentally sent in the clear. The techniques discussed in this book can be applied to almost any sort of radio traffic.

The reader is provided examples of various Russian "number" messages, which at first glance may appear "encrypted". Mr. Roach gives the exact methodology which resulted in one such message's "decryption". A whole chapter is devoted to teaching the uninitiated in how to "decipher" similar messages on their own. The means by which the Internet can be used to allow hobbyists to share information, get translations, and combine intercepts to gain greater insight is described.

According to the author, you don't even need to be able to speak Russian to get the basic meaning of the many Russian messages that are still being broadcast. Mr. Roach stresses that COMINT, even at this level, provides a real insight into just what extent, and how successfully, "capitalist" ventures are developing in the "new" Russia. In fact, Mr. Roach has published a second book, *Hobbyist's COMINT Russian Radio-teletype Dictionary*, to assist those who actually take up the hobby.

The book breaks new ground in showing how much information can be gathered at remarkably small costs by those so inclined. While the author believes that this book could be used to encourage youngsters to seek a career in such arcane pursuits as radio traffic analysis, this may be merely wishful thinking. The book would have benefited from some tighter editing, especially the overly long section describing how to use Compuserve (an on-line commercial computer service) to recover bizarre stories giving details of radio broadcasts from Iran, Indonesia, Iraq and North Korea.

Does this book reveal secret methods and classified government data? Is "national security" threatened? The answer to both questions is no. Nothing here but common sense and the will to put together openly available information. Of course when some Princeton undergraduate had the temerity to reveal in a book how to make an atomic weapon, the government tried, unsuccessfully, to suppress the information. Who knows what action government(s) will take with regard to this book. NSA may have good reason to feel threatened when the public finds out how much information can be obtained at a cost which is a small fraction of what it pays its lowest grade technocrat in a single year!

The *HOBBYIST'S GUIDE TO COMINT COLLECTION AND ANALYSIS* is the ideal for the would be spook, serious military researcher, and anyone who wants to read an amusing and fact filled account of just how much somebody, given the inclination, can learn from easily intercepted radio communications.

The book is available direct from the author.

Cost ; In the United States \$24.00 which includes shipping and handling via 2 day Priority Mail.

Outside the United States \$28.00 which is via Air Mail.

Payment via cheque or money order (US dollars only).

Tom Roach  
1330 Copper Peak Lane  
San Jose, CA 95120-4271  
United States of America

You can also contact Tom on Internet : troach@ix.netcom.com  
or Compuserve : 76347,1025

My thanks to David in Leeds for sending ENIGMA details of this book which appears on Internet. My thanks also to the original poster of the information.



## Simon Mason Writes .....

Hello again, greetings to everyone around the world.

Mossad activity has been very unusual in the last six months or so, especially around the time of the Israeli Premier Rabin's assassination.

In the early autumn, on 12 September 1995, the station MIW obviously had an important message to send. It all started at 11.00 UTC on that date when on 14750//17170 and 20425 kHz, MIW sent the following message :

11.00 - "MIW" 11.02 - "MESSAGE, MESSAGE, GROUP 12, GROUP 12, TEXT, TEXT",

DXHVF WSTXS VQHQT ZWJGG WPJHZ BGHMY ANORL UNAQT BTGVH LYKHM XJMZP  
FDAOL

11.09 - "END OF MESSAGE, END OF TRANSMISSION, MIW, MIW..."

Note that after the "end" message, it went straight into the "MIW" call-up again. This was repeated continuously until around 18.00 when the above three frequencies were replaced by 6658 kHz, but the same message was being sent. The transmission on 6658 kHz continued through the night and at 08.00 on 13 September 1995, 6658 kHz ended and 14750 started up again followed by 17170//20425 kHz shortly afterward. Eventually at 11.00, after sending the same message for 24 hours, MIW fell silent and at 11.15 "MIW 2" was sent.

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Don't these number stations ever check their output or scheduling ? Quite a few instances of stations sending messages on the same frequencies have been noted, a regular occurrence is the 03.00 UTC OLX transmission on 5301 kHz which gets tangled up with a German Counting Station on at the same time.

Bad enough, but don't you think that the German 2 -Letter station "SIERRA BRAVO" on 11545 kHz at 22.30 recently could have done without not only LINCOLNSHIRE POACHER station, but its unwelcome warble jammer as well ?

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Speaking of the 2- Letter stations, I am currently well into a year long study of the frequency schedule of the 23.30 UTC transmissions, namely SIERRA BRAVO and HOTEL KILO. During the three months shown, there has been no change in scheduling, but as higher frequencies have been noted during the Spring and Summer, it is expected that changes will occur soon.

|    | MON  | TUE  | WED  | THU  | FRI  | SAT  | SUN  |                      |
|----|------|------|------|------|------|------|------|----------------------|
| HK | 7532 | 6853 | 7532 | 7532 | 6853 | 7532 | 7532 | Period of NOV DEC 95 |
| SB | 9450 | 9325 | 9040 | 8173 | 8063 | 7858 | 7752 | and JAN 96           |

Note how the SIERRA BRAVO frequencies fall by one channel every day, while HOTEL KILO alternates between just two. The Summer schedule should be interesting.

Back to the MOSSAD transmissions. After the assassination, CIO and VLB began to send lots of "string" messages over a period of a few days as shown here.

| DATE  | TIME  | FREQUENCY | CALL | MESSAGE           |                                           |
|-------|-------|-----------|------|-------------------|-------------------------------------------|
| 8.11  | 13.45 | 10352     | CIO  | CIO12L36P15Z46    | Any new ideas on what these strings are ? |
|       | 18.45 | 4165      | CIO  | CIO1              |                                           |
| 9.11  | 00.45 | 4165      | CIO  | CIO36F13P36R55    | are ?                                     |
|       | 16.45 | 4165      | CIO  | CIO26P14T12R38L54 |                                           |
| 15.11 | 16.45 | 4165      | CIO  | CIO11Z22T8F54R29  |                                           |
| 8.11  | 13.45 | 12950     | VLB  | VLB38P22Z15R46    | Comments always welcome.                  |
|       | 18.30 | 5230      | VLB  | VLB26B14D39       |                                           |
|       | 22.45 | 5230      | VLB  | VLB12A24G36P43    |                                           |
| 9.11  | 10.45 | 12950     | VLB  | VLB28P14Z36B54T20 |                                           |
|       | 12.45 | 12950     | VLB  | VLB22P26L44B33Z16 |                                           |
|       | 17.45 | 5230      | VLB  | VLB29T16L55P16    |                                           |
| 10.11 | 21.45 | 5230      | VLB  | VLB36P12          |                                           |
| 11.11 | 02.45 | 5230      | VLB  | VLB16R            |                                           |
|       | 13.45 | 12950     | VLB  | VLB55P12T34L62    |                                           |

Since then, there has not been anything like this level of activity and VLB2 and CIO2 are sent most of the time.

Unusual transmissions in C.W. have been heard now and again on 3915 kHz. On one occasion a station was sending its callsign (MZ6G) between 20.00 and 20.10. It then sent many 5F groups and recently on the same frequency, another similar callsign (SZCZ) was heard. On both occasions the BBC Singapore relay came on air at 21.30 on the same frequency. (one of the M32 'complex')

Regular transmissions by the YL/SS who signs off with 00000 (V6) have been noted on Wednesday & Thursday at 13.00 with a call-up of 105. For example,

| FREQUENCY | CALL          | DECODE | GROUP COUNT | MESSAGE  | END   |
|-----------|---------------|--------|-------------|----------|-------|
| 12210     | Calls for 105 | 468 x2 | 40 x2       | 5F PAIRS | 00000 |
| 14940     | 5 Minutes 105 | 946 x2 | 123 x2      | 5F PAIRS | 00000 |

Ends with repeat of decode key and group count twice & 00000.

Signal strengths have been very high. Not noted so often during winter.

Here are the current schedules of Spanish language "Atencion+Finale" stations (V2) as received from Tom in the United States.

| TIME  | SUN  | MON  | TUE  | WED  | THU   | FRI  | SAT  |
|-------|------|------|------|------|-------|------|------|
| 00.00 |      |      |      |      |       |      |      |
| 01.00 |      |      |      |      | 5419  | 6883 |      |
| 02.00 |      |      | 9140 |      |       | 7887 | 4028 |
| 03.00 | 7887 | 6826 | 6867 | 6826 | 6797  |      |      |
| 04.00 |      | 5762 |      | 7861 | 10345 | 4028 |      |
| 05.00 |      | 4028 |      |      | 6797  | 6797 |      |
| 06.00 | 6785 | 7890 |      | 8186 | 4028  | 7887 |      |
| 07.00 |      |      | 8010 | 6800 | 6797  | 6797 |      |
| 08.00 | 7887 | 7527 |      |      |       |      |      |
| 09.00 |      |      |      |      | 6797  |      |      |
| 10.00 |      | 4028 | 4028 |      |       |      |      |
| 11.00 |      |      |      |      | 4027  |      |      |

And for C.W. Transmissions (M 8).

| TIME  | SUN  | MON  | TUE  | WED  | THU  | FRI  | SAT  |
|-------|------|------|------|------|------|------|------|
| 00.00 |      |      |      |      |      |      |      |
| 01.00 |      |      |      | 5118 |      | 5417 |      |
| 02.00 | 4028 | 4017 | 4017 | 4328 | 4017 | 5087 | 4017 |
| 03.00 | 4028 | 4017 | 4028 | 5417 |      |      |      |
| 04.00 |      | 7682 | 6797 | 7520 | 6854 |      |      |
| 05.00 |      |      | 7890 | 8066 | 5800 |      |      |
| 06.00 |      | 5810 |      |      |      |      |      |
| 07.00 |      |      |      |      |      |      |      |
| 08.00 |      |      |      |      |      | 6785 |      |
| 09.00 |      |      |      |      |      |      |      |
| 10.00 |      |      |      |      | 6826 |      |      |
| 11.00 |      | 8066 |      |      | 4480 | 4174 |      |

Thanks again to Tom for these schedules, I have personally heard most of the voice broadcasts between 01.00 - 04.00 with quite good reception. For additional schedules for V2/M 8 see elsewhere in this issue.

Finally, I noticed a piece in the January 1996 issue of the U.S. magazine Popular Communications. I also noted that KNIGMA reader Ary in The Netherlands had heard this station.

Reports of GALIB ZAHAL, the Israeli Defence Forces Radio, which normally broadcasts over its own network of AM and FM stations. It is being relayed on shortwave over some sort of utility-type transmitter. (one report says it is VLB near Tel Aviv).

The broadcast is said to be the network's traffic information service, consisting mostly of music. It seems it is best heard around 00.00 on 8127 kHz USB, although other reports show it active as early as 17.50 and as late as 06.00.

If you catch it and want to send a reception report, the address is : MILITARY POST OFFICE BOX 01005, ISRAEL (no city). Despite rumours that this is a spurious or accidental transmission, 'Popular Communications' understand the transmissions are intentional, although a QSL Card from Galei Zahal received by Ed Rausch in New Jersey USA had a penned note on the back which said "We don't transmit on 8127 kHz" - but that's where they are ! Good Listening, Simon.

# HELP PAGE!

Welcome along to another help page, we must apologise for the slight delaying in sending out this issue. We hope however that the contents will make up for this. Unfortunately only two people collate word process, print and post out ENIGMA and with the amount of information contained in each issue this is quite a big task. We feel it is important to provide accurate and detailed information and to this end we hope you will not mind a slightly more flexible approach to the issue date.

HAVANA MOON. Just as we were going to press I received word from Ken in Doncaster that the "famous" American Numbers monitor Havana Moon had died. I don't have the full story yet (more details will appear in issue 11) but understand that Havana Moon was in fact a William T. Godbey who claimed to be a former U.S. intelligence officer. He was a regular contributor to Monitoring Times and also wrote several books on the subject of Number Stations.

LANGLEY PIERCE - INTERCEPTING NUMBER STATIONS. I recently heard from a reader in Lancashire who told me that the above mentioned book was no longer available. I have since spoken to Interproducts, the publishers who inform me that a new updated edition will be available in June this year.

The cost will remain the same as the first edition. We have still had no word from Mr "Langley Pierce". We mentioned this in our last issue. Is Mr Pierce a real person? Is he more than one person (a sort of collective?) Does he read ENIGMA? Will he have changed any of his views or indeed used some of our readers' suggestions about Number Stations in his new updated book. We shall have to wait and see.

Of course, we must always be aware of disinformation agents and unsolicited infiltration.

EXTINCT STATIONS - Information is still very much needed on the following, easily remembered but inadequately recorded, numbers stations: Aida (S1), Piano Piece (S/O - music unidentified), Tyrolean Music Station (G1) and the Jazz Player (G9 - music unidentified). Is there anybody out there who can identify the language used by V8, the new Oriental Music station?

We are still seeking information from readers of their earliest logs in order to ascertain when stations commenced operation. This information is required on ALL stations in order build up a full picture of number station backgrounds.

## Letters to E.N.I.G.M.A.

A very warm welcome to issue 10. Thanks to all our readers who have taken time to write in. Our first letter this time round is from Chris in Reistertown USA, Chris says "I have a page on the Internet/World Wide Web devoted to Number Stations. The address is <http://www.access.digex.net/~cps/numbers.html>".

On the subject of Internet we received a message from an organisation called Intelligence Online, they started up in 1980 and produce a Newsletter 23 times per year. The current subscription price is \$315 per year for the email version or \$350 for a combined email & hard copy version. They can be contacted at Intel-Info <aims@ext.jussieu.fr> or if you are like me and still on the hard shoulder of the information super-highway, ADI, 16 rue des Ecoles, 75005, Paris, France.

In the last issue, Geoff in Norfolk asked if we were aware of any cassettes which would help in the identification of the many modes used on SW. Yves in Luxembourg wrote to tell us about a C90 cassette which has examples of CW, FAX, RTTY, SITOR, ARQ, FEC etc. the cassette is called "Test Und Demonstrations" and costs DM19,80. Available from Siebel Verlag, Auf Dem Steinbuchel 61AD, D-53340 Meckenheim, Germany.

Now a letter from Keith in Kent. He heard about ENIGMA after reading John Griffiths article "Radio by Numbers" in the January issue of SW Magazine. Keith writes that, between 1944-1947, He was a member of the Radio Security Service, actively engaged on interception at several sites in this country and latterly at the discrimination HQ, then at Eastcote. He was invited to move to Cheltenham but declined because "at the time pay and conditions were awful". Being unable to find work elsewhere, he rejoined the organisation at Knockholt in Kent then known as F.O.R.D.E. (Foreign Office Research and Development Establishment) and was employed exclusively on non-morse reception. He later moved to Lydd HF/DF unit until leaving full-time employment in 1954. He was invited to join a reserve unit then being established but "that is another story".

"Even at that time traffic was almost exclusively in five-figure code and some messages were extremely long ! Many of the important Russian stations sent an R between every tenth group\*. At Lydd DF we were able to track many of these stations which operated world-wide".

Keith tells us that he has recently retired and decided to write a book on life in the RSS and the service Y groups in WW2. "My research has been going on for almost nine months and I have acquired many articles from people who, like me, would like their efforts in finding the traffic for Bletchley Park to be formally recognised. One of their ex-boffins has encouraged me to put pen to paper and I am wondering whether there are any members of ENIGMA who would be interested in contributing a chapter, covering both the technical and also the personal side of life in the 1940's".

If you would like to contact Keith, please send your letters to us (Mike & Chris) at the ENIGMA office and we will pass them onto him. He can then contact you direct.

(\* presumably these were morse messages) - Ed..

Thank you to all our readers who responded to our enquiry concerning the methods used by agents to return messages to their masters. While you will have read much in ENIGMA about messages going out, little is ever said about how agents get in touch with the HQ.

Our first letter comes from Brian in Sussex England. He starts by saying that his thoughts are purely speculative, and are largely based on what he has read on the subject, but this is how I understand the system to work :

"The agent, (or perhaps more correctly - illegal, since he is likely to be using a false nationality and identity), will receive coded messages directly from his country via radio. These messages are sent openly over the short-wave, knowing that although it is a simple matter to trace the origin of the transmissions, (If you are a government that is !!), there is no way that the recipient of the messages can be traced. Messages are usually timed to correspond with late evening or early morning in the agent's location, which enables him to listen regularly to the messages without interfering with his normal routine, which would arouse suspicion.

Every step must be taken to ensure that the identity of the agent remains secret. He is likely to have contact with just one other person who will act as a go-between for the information and messages he passes back. Contact will be kept to an absolute minimum. Vassall made a chalk mark on a certain tree when he had information to pass to his controller, who would then contact him.

Often, a dead-letter box will be used, which may be a hollow tree or a waste paper bin or similar, where packages are left and collected, with no physical contact made at all. Messages can be reduced to microdots and concealed in books, letters and under postage stamps on envelopes. The Krogers used an antiquarian book mail order business as a cover. Again, the emphasis is on security - should any of these items be discovered on route, they would not be traceable back to the agents. Although a transmitter was discovered under the floor of the Krogers bungalow, it was very well concealed, and likely to have been there purely in case of emergency. (Incidentally, another concealed transmitter was dug up in the garden 20 years later !).

Direct and repeated use of a transmitter is extremely risky, and would quickly result in the detection and arrest of the agent. The direction finding abilities of the authorities are extremely efficient.

So I would say that direct transmissions by radio would not be used, except in exceptional circumstances. Having said that, there are some ways in which it could be used. One would be the use of high speed burst transmissions and the other could be via apparently innocent amateur radio contacts. I believe that the high speed burst method was used, perhaps in the 50's and 60's, but I think that the technology available today would make even this method detectable".

Following on from Brian's comments our regular contributor 'D' takes up the case : "It depends how urgently the Centre needs the information or how soon its value decreases and so a squirt transmitter would be supplied, remember the Krogers in England and Sabotka in Canada ?

This decision is done on a case by case basis. These would probably be used where the RIS do not have illegals or an embassy near the agent or the person is too valuable to risk contacting personally. It also serves to boost the ego of the agent because they have direct contact with their bosses and limits the number of people who deal with them.

Transmissions by illegals would probably only be done in peacetime once a year for testing that the set still works and used regularly in wartime if there was a diplomatic break and embassy staff were withdrawn from a target country. Their particular use would be for the illegal resident to maintain contact with the Centre. They are also used by sabotage units which could be activated or infiltrated in wartime. A squirt set was dug up in the early 80's in North Wales \* you might remember and William Hood describes a similar incident in Austria in his book "Mole".

I suspect the Services of other countries ie. not US or Russia use radio a lot more because their representation in certain countries might be far more limited and so communications are far more difficult, particularly in denied areas of the world eg. China and Iran. Their tradecraft might also lack sophistication and could be compromised. The countries they operate against may also not have advanced radio direction finding systems which would be required to detect such communications. Squirt sets usually have an anti-handling device and will blow up if they are tampered with. The RIS favoured the use of the postal systems or dead letter boxes for communications rather than risking compromising somebody by radio broadcasts being detected. The use of transmitters tended to be a bit melodramatic anyway and posed majors problems if a set broke down because their sole communications link was cut.

Their presence also helps to condemn as it did with the Krogers or could be used to convey disinformation as in the Double-cross system or the Germans with Englandspiel in WW2.

The West considered giving Penkovsky a transmitter where he could put information in code onto a tape and then transmit it close to an embassy to avoid meeting him. This was to counter the hostile surveillance environment in the USSR. The aerial would have gone down his trouser leg and would be received on a receiver in the US embassy after the squirt had been made. This information could then be passed back to HQ. They decided against it because its presence if discovered in a routine search could have compromised him and it would be difficult to get it to him. The amount of data which could have been transmitted was also very limited and the material was not suitable for transmission eg. circuit diagrams.

\* Can any readers remember the transmitter which was dug up in North Wales, I (Chris) remember that the story made the daily newspapers, does anyone have the clipping or other details? Please write in.

In early January 1996 we received a letter from London, interesting information concerning a certain Numbers Station were detailed, we are reproducing the letter in full on the next page.

Referring to your article entitled : " Radio by Numbers " (John Griffiths) that appeared in this month's (January 1996) Shortwave Magazine, I am able to shed a little light upon on the YANKEE HOTEL FOXTROT (E10 ) type of female voice signals which can be monitored on several H/F frequencies, most notably from the Middle East, since they are of Israeli origin.

The female voice in question carries Hebrew intonation and in fact the same one has been used for at least the past twenty five years, \* which probably implies that the original speaker could well be a grandmother by now.

Blind transmissions, broadcast simultaneously on two well spaced frequencies, are directed to field personnel who mainly operate in neighbouring countries. Dummy messages are also transmitted to "phantom" operatives. Messages may indeed be received by "traitors" who rarely see themselves as such, or by Israeli or third country nationals to whom this description does not apply.

Call-signs suffixed with the numeral, TWO, confirm reception of an incoming message, which on H/F will have been transmitted with a toy transmitter in brief burst morse.

The field transmitter's input into a (house/telephone cabling) or shorted television antenna lead, is typically only ten watts. High gain antennas, diversity reception and quality receiving equipment process the weak signals which are then usually automatically decrypted.

Encryption is accomplished with one time pads or significantly enhanced basic alphabet shift transpositioning, the code book being any commonly held publication.

\* More like 20 years (Ed), these were certainly not around in 1970-2 as far as I'm aware. Comments welcome.

Our sincere thanks to John Griffiths & and also Any Cadier at Short Wave Magazine for your support of ENIGMA.

Now a letter from the United States and greetings to Steven Aftergood, Steven produces a Newsletter entitled Secrecy & Government Bulletin. Published by the Federation of American Scientists (FAS), a 50 year old public interest organisation of natural and social scientists concerned with issues of science and society. The FAS Project on Government Secrecy is supported by grants from the HKH Foundation and the CS Fund. Back issues are available at the FAS secrecy homepage at <<http://www.fas.org/pub/gen/fas/sgp/>>. Or for more information write to : Steven Aftergood (FAS) 307 Massachusetts Avenue, N.E. Washington. D.C. 20002. USA.

My thanks to all our regular contributors for all your letters logs and information, I'm sorry if we are not always able to mention every-one who writes in, but rest assured we collate all the logs we receive for our Station News sections and retain all correspondence for use in features and articles.



Thanks to the following for mentioning ENIGMA and also to those members who have written to broadcasters to tell them about the group. Radio Bulgaria carried a feature on Number Stations and told the truth, no stories about weather broadcasts, also Radioropa the German private station carried a feature. My thanks also to the BBC Monitoring Station & the also the Science Museum in London for recommending ENIGMA to enquires.

Now onto the question from issue 9 of ENIGMA. "Is it legal to listen to Number Stations?" A reader in Britain writes.

"I am sure you are aware of the situation that has developed with the popularity of scanners among 'non-enthusiasts'. Here is the position as I see it. It is undoubtedly illegal to listen to such stations in the UK, since the only legal listening one can indulge in is Licensed Broadcast stations, Licensed Amateur Stations and the odd one or two utility broadcasts which are intended for public use. (Some weather transmissions etc).

However, although technically it is just as much an offence to listen to your local airport as is to listen to your local police station, you will find in practice that openly listening to aircraft will cause you no problems at all, while openly listening to you local police will likely result in your arrest and subsequent appearance in the local magistrates' court, with a hefty fine.

Part of my hobby involves utility listening, and most stations outside the UK are not only happy to receive reception reports, they positively encourage it. (Note the QSL from OLY). In my collection are cards and letters from government stations all over the world, including French Air Force, Danish Navy and the US Diplomatic Service. However, with stations operating within the UK, this is generally positively discouraged and could result in interest being taken from certain quarters including possible prosecution.

While it is technically illegal to listen to number stations, any prosecution would have to contain evidence concerning the illegality of the transmissions you are being prosecuted for listening to. In other words, they would have to prove in court that the station you were listening to was not a licensed station. I for one would be quite happy to stand in court and hear such revelations from the DTI as to the nature and location of the number transmission, but I somehow think it extremely unlikely that they would ever put themselves in this position.

Only in the unlikely event that ENIGMA were to publish details about the security services or (associated sites) which could be construed as breaching the Official Secrets Act, (another diplomatic minefield!), is it likely that anyone would fall foul of the authorities. Far more likely, should we be getting just a little too close for comfort, would be a visit or a letter from an official, with a friendly warning".

A reader in Germany also wrote: "It is important to listen to these stations because the operators (secret services) want to keep them hidden in the dark and because they prefer to say nothing about the existence of such broadcasts. While pirate radio stations are often raided, the governments try to keep their own completely illegal spy stations on the air.

The numbers stations also cause a lot more interference than the small pirates. To watch the illegal operations that are protected by governments is the task of the number stations monitors".

We would still like to hear more from readers on this subject, I know from letters I have received that some readers are afraid to contribute to ENIGMA. Please let us have your comments on the opinions we have published so far. Thanks.

A few more quick hellos. First to Daniel in Switzerland - thanks for the photo-card. Daniel has sent a feature about ENIGMA to the German publication Radio Hören. Greetings also to Jonathan in Harare, Zimbabwe. Jonathan is 24 years of age and has been a SW listener for 8 years. He says it is difficult to find reference material on SIGINT & ELINT etc but has managed to build up a collection of 7 books. He also says that he is able to hear Alpha-Phonetic stations (E10) such as CIO & YHF.

Alexander writes from Delft in The Netherlands and asks about his suggestion concerning an electronic version of ENIGMA. We are sorry to say that an electronic version of ENIGMA would be unlikely at present, Alexander is interested in exchanging logs and topics of interest between issues of the newsletter and he can be contacted at -

a.koutamanis@bk.tudelft.nl (Alexander Koutamanis) @ INET.

Alexander did say that he was unhappy with his own summary of ENIGMA which he felt looked too much like our own World Wide Web pages.

Dave in Preston England sent us some further details about our investigations into Radio North Sea International. Has a side issue Dave asks if any of our readers have construction details of log-periodic beams 50 Mhz -1000 Mhz. If you have please send them in and we will forward them to Dave.

We are still looking for background on RNI and the alleged number transmissions.

Over now to Andreas in Germany. Thank you for your letter and logs. He starts with comments about the numbers heard in CW via satellite. Andreas says there is an international code for weather broadcasts and signals always end with NNNN. We agree with your comments that there are better technologies for sending such information.

Andreas also comments on the theory that Lincolnshire Poacher uses message breaks such as 00004 & 09000, there are 46 different 5F groups with four 0s (once 00000 and then 9 different numbers can be on 5 different places ;  $9*5+1=46$ ). Overall, there exists 10 5F groups (10 possibilities for each digit). Every day, the Poacher sends 9 different messages, that means  $9*200=1800$  groups out of 100000. With random delivered groups, the number of potential stops (four 0's) out of 46 equals the  $1800/100000$  :

$$\begin{aligned}x/46 &= 1800/100000 \\x &= 1800*46/100000 \\x &= 0.828\end{aligned}$$

That means that per day on average 0.828 groups are sent. Per message period (starting every 1st and 15th of the month) different numbers of messages are sent ; let's take 11, which is low :

$$y=11*200*46/100000 = 1.012$$

So in one message period one such group must occur - or it's very likely that on average one will occur, even with only 11 messages, which is the lowest figure I've monitored in a complete period. The highest number of messages was 18 :

$$z=18*20046/100000=1.656$$

So to judge our previous theory from a reader in Cheshire we would need more exact material.

Andreas has continued his extensive monitoring of Lincolnshire Poacher and reports that although changes have taken place between Summer and Winter frequencies this has not occurred in all groups - He only noted changes in E and J. All the others stayed the same - although some frequencies were inaudible due to poor propagation. Both E & J changed to higher frequencies - perhaps their targets are in the southern hemisphere. From 10.00 to 13.45 every day the station has been using 16084//15682//14487. In the evenings the higher frequencies were not heard often, again probably due to conditions. Some groups such as A & I do not change frequencies much during the week.

The message period starting October 1st was the one when the Poacher was most active. 18 different headers occurred ! Maximum number of headers were G with 6, D with 3 and I with 3. Most other headers had just two messages, but had three messages in the period September 15th to October 1st.

Having started listening to LP in December 1994 it seems that traffic is very stable and on a low level at the present time. Since November 1st only one message has been sent to each header in the 15 day period staying at 11 messages per period - this follows that busy period in autumn.

In issue 9 we reviewed 'By Way of Deception' - Victor Ostrovsky, Andreas writes to say that the book also appeared in the German language. The title is "Der Mossad" by Victor Ostrovsky & Claire Hoy and is published by "Knauer" in 1992, the ISBN is 3-426-77022-9, and it costs DM 14.90.

Mike in Kent sent us an interesting E-Mail posting collated by Brian Kelk. The information shows all the Phonetic Alphabets which are in general use and includes everything from German to Chinese. English versions include the one used by the Alpha-Phonetic network (E10) and is identified as the NATO phonetic alphabet. This is shown as approved by the Civil Aviation Organisation & FAA and is listed by the International Telecommunications Union and dates from 1956.

The more obscure alphabet used by the Nancy Adam Susan family (E15) is also listed and is shown to originate from 1948. The alphabet is identified as the ARRL (American Radio Relay League) version.

I copied down a message from NSA- the code used is not random and was sent as ZWMD? ZOZCZ ZRVZY ZXFAF OTNRZ Z?YRY ZZBRY ZZLIZ XRQYY YTHFA. All those Z's ! Have any other readers copied messages from (E15) ?

That's all for this time around. Sincere thanks to everyone. Please keep in touch and good listening.

## Things That Go Buzz In The Night

Once again a warm welcome to our 'Things that go Buzz' section. Thanks as always for all the contributions.

THE BUZZER 4625 kHz. In the last issue we mentioned that the Buzzer may be coming from an area near the town of Penza in Russia. Andreas in Germany wrote to tell me about an organisation which is producing a document called the Transmitter Documentation Project, Showing broadcast sites.

A copy is available from Ludo Maes, P.O.Box 1, B-2310, Rijkevorsel, Belgium. The cost is £5.00, \$7.00, 10 DM or 7 IRC's.

Ludo states that transmitters near Penza are in fact at Zelenaya Roshcha, the exact location is at 44.01°E and 54.09°N. There are four 60kW-transmitters, one 80kW unit which was active in SSB and is off air at the moment and one 10kW transmitter. The 60/80 kW transmitters were erected in the 1980s, no information about the 10 kW unit is available. The four 60kW are sometimes combined to 240 kW to carry broadcasts like the Russian "Mayak" programme. Perhaps there are also more transmitters in use at this site - maybe even the BUZZER !

The BUZZER is still making strange noises at just before the hour, although as Brian in West Sussex comments its time lines are somewhat erratic, it is certainly no time signal and was recently noted changing its tone at 3-1/2 minutes before the hour.

Mike in Kent also mentions the BUZZER, "I've spent quite a few hours on this signal, the BUZZER doesn't appear to be sending any 'information' and the change just before the hour is always the same and appears to be only the addition of another tone to the normal one resulting in a sort of warble. I've tried all the usual modes to look for any anomalies ie AM, USB, LSB, DSB, FM, FSK and fed the audio into my computer decoders but no results. It is a pure and simple propagation marker of sorts with no information content".

THE BUZZ - Not quite the same as the above signal the Buzz is the sort of thing which you would easily tune right past. It sounds more like the sound of local interference or perhaps something generated internally in a receiver, but we have checked out the signal from various locations and it is well received over a large area. Don't expect too much, all you are likely to hear is a buzzing sound, although we have had reports of some white noise bursts.

Try 6895 7545 7575 8655 11230 & 10105 the signal can sometimes be heard on up to 3 simulcast frequencies. Comments as always welcome. Suggest you try at different times until successful.

THE PIP - Still active on 3757 & occasionally 5450 kHz. I recently heard 2 Radio Amateurs on 3757 referring to that 'bleeping thing' which was causing them a few problems. Any new ideas on this un-exciting Pipping noise.

THE ECHO - The excitement never ends, after some time spent 'missing' from our column the ECHO has now been found alive and well on 3876 kHz, although it is under a heavy facsimile signal much of the time. The ECHO signal can be heard from early evening onward. It is another of those fairly pointless signals consisting of nothing more than a bleep every 4 seconds.

Previous frequencies have included 4080 4119 & 4382 kHz. It will be interesting to see if it returns to any of these later in the year. I have never heard it on more than one frequency at a time, which perhaps suggests only one transmitter is in operation. Any comments welcome.

FADERS (XF) - Despite my 'double page spread' in issue 9 I have had no new information. Please have a look at this again if you have issue 9 handy and when you have spare minute give them a listen. I am still very keen to have feed back on these peculiar signals. I did receive logs from Brian in Sussex and Richard who commented that the signals are very common.

THE CRACKLE - This is still around and can be heard in the evening time in Europe on 5500/5505. I have also noted it on 6586 and 9223 kHz. One reader described it as like 'someone dragging a load of old tin cans along the floor'. At times the 5 Mhz frequency blocks out Shannon Volmet on 5505.

THE CLICKER - Another seemingly pointless transmission. One reader described this as the 'dashless morse station'. The one and only thing it ever does is send a random clicking sound. The frequency usage seems random but I have noted it with a carrier on 3905 kHz in the evenings.

LOW HUM - This is on air quite often on 4622 kHz. Have you heard it? The signal consists of nothing more than a low humming noise. Try evenings.

#### HAARP (HF ACTIVE AURORAL RADIO PROGRAM)

Has anyone any information on this US military operation in Alaska? Apparently a high power HF transmitting station has recently been built whose purpose is to 'modify' ionospheric conditions to the advantage of US forces during any military conflict. The aerial system is complex, and consists of numerous masts arranged in a grid configuration, and covering an area of 150 acres (a third of the proposed area). It is believed that transmissions began late last year. Does anybody know what sort of mode is employed or the frequencies used?

## The Three Note Oddity (G4)

Well, I'm sitting here a rather disappointed man. This was going to be a substantial feature on the station, but alas and as is so often the case with writing these articles, no sooner has one decided to write one, when the station concerned assumes a radical change of habit!

In just this way, one of the most enigmatic of numbers stations, the Three Note Oddity, has suffered a drastic change. In over three years of monitoring the station, there had been some sporadic changes to its operation, but at the end of 1995, the whole schedule appears to have been overhauled with only two known, regular slots now in use. But enough of the lamenting of lost friends and on with the good news.

### Location

We can exclusively reveal that this station transmits from a site just outside of Budapest in Hungary. Therefore, we can probably assume that the station is run by the Hungarian Intelligence Service, of which little is known. However, it is known that the British MI6 has trained Hungarian secret service personnel since 1990, and that the organisation has close links with the German BND and the US CIA, both of whom have been resident in Budapest since 1992.

As you will see from the list of known transmissions on a following page, the Three Note Oddity had a number of long-running schedules with some interesting common themes. You will see that the Sunday transmissions at 1310 and 2210, and that of Saturday at 2110 all exhibited a yearly cycle of frequency use. However, all these transmissions appear to have ceased operation at the beginning of 1996. The only remaining, known schedule is that of Sunday at 2105, and its repeat 35 minutes later, at 2140. You will notice that in this case, the later transmission is always 100kHz lower than the earlier.

Despite such a dramatic down-turn in activity, I remain confident that there are new transmissions, but finding them will be a difficult job. The station has an uncanny knack of remaining hidden by virtue of some unusual combinations of time, day and frequency. More often than not over the past few years, new schedules have come to light only by chance and I'm sure that this will continue to be the case.

It is interesting to note that the Three Note Oddity has been operating since at least 1988 and features in both Simon Mason's "Euronumbers" and Langley Pierce's "Intercepting Numbers Stations" books. However, and to illustrate my earlier observations on this station's complex schedule, none of the frequencies quoted by those authors appear in my list. Adding this information to that I have gathered, it seems likely that schedules are active for about 3 years before being changed.

### Characteristics

#### Schedule

Most, if not all transmissions follow the same basic pattern, in that the same message is broadcast on the same frequency, at the same time, on the same day of each week for a month. The next month, the station changes frequency and sends a different message, which is again repeated each week. Messages are usually also rebroadcast on a different frequency and at a different time or day. For example, Sunday 2210 was a rebroadcast of the message sent at 1310 on that day.

The station obeys Central European Time (CET = UTC+1), which means that some transmissions in March and October are one hour later than expected in the UK. This is because the switch-over to Daylight Saving Time is often not synchronised throughout Europe. Please note that all times quoted in the schedules and this article are UK Local Time.

### Message Format

The station has a distinctive call-up consisting of 5 minutes of a repeated three note rising scale. The tones used to be pure, but during Autumn 1995 changed to a harsh, almost buzzed note. At the end of the initial 5 minute period, a female announcer calls "Achtung, Achtung" and then proceeds to read anything up to 50 groups of 5 digits, each group being repeated. The complete message is then repeated after another "Achtung, Achtung" before the transmission ends with "Ende, Ende".

Pronunciation of numbers is standard "radio German" as follows:

|          |           |         |         |           |
|----------|-----------|---------|---------|-----------|
| 1= Eins  | 2= Zwo    | 3= Drei | 4= Vier | 5= Funnef |
| 6= Sechs | 7= Sieben | 8= Acht | 9= Neun | 0= Null   |

The AM transmitter used is of good quality, stable and always spot on frequency. Sometimes either the upper or lower sideband of the transmitter is suppressed. Although the messages are often sent at very low volume, there appear to have been no other mistakes by its operators over the three years that I have monitored the station. The station usually comes on-frequency some 10-15 minutes before the scheduled time and tunes-up with a steady 1kHz tone followed by a few 5F groups as the tape machine/speech synthesiser is adjusted. At the end of the broadcast, the transmitter is swiftly turned off.

Some frequencies that have been used were deep in the European shortwave broadcast bands which almost certainly indicates a very limited coverage, perhaps only to countries bordering Hungary.

### Message Content

Living up to its name, the messages sent by this station appear to be anything but random. A number of 5F groups appear across all messages, and is not uncommon to see a particular 5F group appearing three or four times in the same message. As yet though, there appears to be no indication of the meaning of these groups, or any other patterns in messages. It has been noted that a certain number of groups appear regularly within the first 5 groups of messages, and that these are perhaps destination or priority indicators. Message lengths can be anywhere between 21 and 50 groups (Note that the station gives no group count as part of its message format).

### Continuing the Search

At the time of writing this article, all transmissions except Sunday 2105 and 2140 have been abandoned, or have moved to other days, times and frequencies. If you do hear the station, please contact me via the ENIGMA offices, I will be delighted to hear from you!

My thanks go to "Deep Throat" for arranging a DF of the station in late 1995.

73, Mike (e-mail: [mikec@praxis.co.uk](mailto:mikec@praxis.co.uk))

3NOTEFRQ

| Month     | Year | Transmission Schedule and Frequency List (ALL TIMES IN UK LOCAL) |                |                |                |                |                  |                  | The Three Note Oddly |                |                |                  |                 |             |  |  |  |
|-----------|------|------------------------------------------------------------------|----------------|----------------|----------------|----------------|------------------|------------------|----------------------|----------------|----------------|------------------|-----------------|-------------|--|--|--|
|           |      | Sunday<br>1310                                                   | Sunday<br>2095 | Sunday<br>2105 | Sunday<br>2140 | Sunday<br>2210 | Saturday<br>1900 | Saturday<br>2110 | Friday<br>0510       | Friday<br>1700 | Friday<br>2040 | Thursday<br>2000 | Tuesday<br>2000 | SUN<br>0510 |  |  |  |
| July      | 1993 |                                                                  |                |                |                | 5718           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| August    | 1993 |                                                                  |                |                |                | 5617           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| September | 1993 |                                                                  |                |                |                | 5487           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| October   | 1993 |                                                                  |                |                |                | 4827           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| November  | 1993 |                                                                  |                |                |                | 4139           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| December  | 1993 |                                                                  |                |                |                | 3815           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| January   | 1994 |                                                                  |                |                |                | 4126           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| February  | 1994 |                                                                  |                |                |                | 4357           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| March     | 1994 |                                                                  |                |                |                | 4562           |                  |                  |                      | 5472           |                |                  |                 |             |  |  |  |
| April     | 1994 |                                                                  |                |                |                | 4751           |                  |                  |                      | 6641           |                |                  |                 |             |  |  |  |
| May       | 1994 |                                                                  |                |                |                | 5637           |                  |                  |                      | 7538           |                |                  |                 |             |  |  |  |
| June      | 1994 |                                                                  |                |                |                | 6547           |                  |                  |                      | 7481           |                |                  |                 |             |  |  |  |
| July      | 1994 |                                                                  |                |                |                | 5718           |                  |                  |                      | 6853           |                |                  |                 |             |  |  |  |
| August    | 1994 |                                                                  |                |                |                | 5617           |                  |                  |                      | 6642           |                |                  |                 |             |  |  |  |
| September | 1994 |                                                                  |                |                |                | 5487           |                  |                  |                      | 5817           |                |                  |                 |             |  |  |  |
| October   | 1994 |                                                                  |                |                |                | 4827           |                  |                  |                      | 5329           |                |                  |                 |             |  |  |  |
| November  | 1994 |                                                                  |                |                |                | 4139           |                  |                  |                      | 3941           |                |                  |                 |             |  |  |  |
| December  | 1994 |                                                                  |                |                |                | 3815           |                  |                  |                      | 3941           |                |                  |                 |             |  |  |  |
| January   | 1995 |                                                                  |                |                |                | 3127           |                  |                  |                      | 4627           |                |                  |                 |             |  |  |  |
| February  | 1995 |                                                                  |                |                |                | 3409           |                  |                  |                      | 5448           |                |                  |                 |             |  |  |  |
| March     | 1995 |                                                                  |                |                |                | 3419           |                  |                  |                      | 5472           |                |                  |                 |             |  |  |  |
| April     | 1995 |                                                                  |                |                |                | 4581           |                  |                  |                      | 6741           |                |                  |                 |             |  |  |  |
| May       | 1995 |                                                                  |                |                |                | 4698           |                  |                  |                      | 7538           |                |                  |                 |             |  |  |  |
| June      | 1995 |                                                                  |                |                |                | 5281           |                  |                  |                      | 4628           |                |                  |                 |             |  |  |  |
| July      | 1995 |                                                                  |                |                |                | 5422           |                  |                  |                      | 4773           |                |                  |                 |             |  |  |  |
| August    | 1995 |                                                                  |                |                |                | 5133           |                  |                  |                      | 4360           |                |                  |                 |             |  |  |  |
| September | 1995 |                                                                  |                |                |                | 4484           |                  |                  |                      | 4208           |                |                  |                 |             |  |  |  |
| October   | 1995 |                                                                  |                |                |                | 3389           |                  |                  |                      | 5817           |                |                  |                 |             |  |  |  |
| November  | 1995 |                                                                  |                |                |                | 3276           |                  |                  |                      | 5329           |                |                  |                 |             |  |  |  |
| December  | 1995 |                                                                  |                |                |                | 3199           |                  |                  |                      | 4276           |                |                  |                 |             |  |  |  |
| January   | 1996 |                                                                  |                |                |                | 3227           |                  |                  |                      | 3941           |                |                  |                 |             |  |  |  |
| February  | 1996 |                                                                  |                |                |                | 3409           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| March     | 1996 |                                                                  |                |                |                | 3815           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| April     | 1996 |                                                                  |                |                |                | 4581           |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| May       | 1996 |                                                                  |                |                |                |                |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| June      | 1996 |                                                                  |                |                |                |                |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| July      | 1996 |                                                                  |                |                |                |                |                  |                  |                      |                |                |                  |                 |             |  |  |  |
| August    | 1996 |                                                                  |                |                |                |                |                  |                  |                      |                |                |                  |                 |             |  |  |  |

5166  
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